L4 ANSWER 15 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A method is provided for enhancing the soly. of an ionizable compd. in a lipophilic medium by admixing the compd. with an effective soly.-enhancing amt. of an N,N-dinitramide salt. The ionizable compd., upon ionization, gives rise to a biol. active cationic species that ionically assocs. with the N,N-dinitramide anion N(NO2)2 following admixt. with the N,N-dinitramide salt. The biol. active cationic species may be a pharmacol. active cation, in which case the method is useful for enhancing the penetration of the blood-brain barrier by the pharmacol. active cation. In other embodiments, the ionizable compds. are medical imaging or diagnostic agents, or agricultural agents such as pesticides. Salts of biol. active cations and N,N-dinitramide ion are also provided as novel compns. of matter.

ACCESSION NUMBER: 2003:58011 CAPLUS
DOCUMENT NUMBER: 138:126950
TITLE: N,n-dinitramide salts as solubilizing agents for biologically active agents
INVENTOR(S): Bottaro, Jeffrey C.; Petrie, Mark A.; Penwell, Paul E.; Bomberger, David C.
PATENT ASSIGNEE(S): SRI International, USA
SOURCE: PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003006371	A1	20030123	WO 2002-US21802	20020709
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003026850	A1	20030206	US 2001-905577	20010713

PRIORITY APPLN. INFO.: US 2001-905577 A 20010713
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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NEWS 20	May 19	RAPRA enhanced with new search field, simultaneous left and right truncation
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NEWS 22	Jun 06	PASCAL enhanced with additional data
NEWS 23	Jun 20	2003 edition of the FSTA Thesaurus is now available
NEWS 24	Jun 25	HSDB has been reloaded
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NEWS 26	Jul 21	Identification of STN records implemented
NEWS 27	Jul 21	Polymer class term count added to REGISTRY
NEWS 28	Jul 22	INPADOC: Basic index (/BI) enhanced; Simultaneous Left and Right Truncation available
NEWS 29	AUG 05	New pricing for EUROPATFULL and PCTFULL effective August 1, 2003
NEWS 30	AUG 13	Field Availability (/FA) field enhanced in BEILSTEIN
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NEWS 32	AUG 15	PCTGEN: one FREE connect hour, per account, in September 2003
NEWS 33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS 34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003
NEWS 35	AUG 18	Data available for download as a PDF in RDISCLOSURE
NEWS 36	AUG 18	Simultaneous left and right truncation added to PASCAL
NEWS 37	AUG 18	FROSTI and KOSMET enhanced with Simultaneous Left and Right Truncation
NEWS 38	AUG 18	Simultaneous left and right truncation added to ANABSTR

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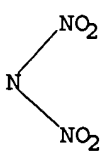


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L2            15 SEA SSS SAM L1

=> s l1 full
FULL SEARCH INITIATED 17:16:34 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED -    477 TO ITERATE

100.0% PROCESSED     477 ITERATIONS                                 267 ANSWERS
SEARCH TIME: 00.00.01

L3           267 SEA SSS FUL L1

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                                                       ENTRY    SESSION
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FILE COVERS 1907 - 11 Sep 2003  VOL 139 ISS 11
FILE LAST UPDATED: 10 Sep 2003  (20030910/ED)

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  substance identification.


=> s l3
L4            415 L3

=> d l4 1-415 abs ibib
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L4 ANSWER 1 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The invention relates to manuf. of ammonium dinitramide (ADN) particles contg. fine additives esp. stabilizers, combustion-modifying agents, and/or energy carrier. Manuf. of said ADN results by (1) migration of additives in the ADN particles by dispersing the additives in a matrix liq. in which the additives and ADN particles are sparingly sol., (2) heating the dispersion at a temp. above the melting temp. of ADN, (3) addn. of ADN followed by emulsification of the melted ADN and contacting with solid additives, (4) cooling at a temp. under melting temp. of ADN, and (5) sepg. ADN with the integrated additives from the matrix liq. ADN is esp useful as an oxidizer for propellants and as an explosive.

ACCESSION NUMBER: 2003:589501 CAPLUS
DOCUMENT NUMBER: 139:119441
TITLE: Manufacture of stabilized and modified ammonium dinitramide
INVENTOR(S): Heintz, Thomas; Krause, Horst; Teipel, Ulrich
PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft Zur Foerderung Der Angewandten Forschung E.V., Germany
SOURCE: Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1331213	A2	20030730	EP 2002-27258	20021206
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
DE 10201937	A1	20030807	DE 2002-10201937	20020119

PRIORITY APPLN. INFO.: DE 2002-10201937 A 20020119

L4 ANSWER 2 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The invention relates to decomposable solid compns. generating H2 according to a self-sustained combustion reaction after initiation of the reaction with a suitable heat source. The compns. include a complex-borane made up of B, H, and N and an ammonium salt of general formula NH4Y (Y represents a grouping only made up of N and O such as nitrate or dinitramide). The compns. contain .gtoreq.90 wt.% (complex borane + NH4Y). The complex borane/NH4Y wt. ratio is (1-10):1. The compns. are stable at the ambient temp. and provide 13-18% H2. The arrangement permits to decrease the size and the wt. of the H2 generators used in certain systems, in particular in the fuel cells with proton-exchanging membranes.

ACCESSION NUMBER: 2003:554034 CAPLUS
DOCUMENT NUMBER: 139:119337
TITLE: Solid compositions for combustion generation of hydrogen comprising a complex borane and an ammonium salt
INVENTOR(S): Perut, Christian; Gauthier, Corinne
PATENT ASSIGNEE(S): SNPE, Fr.
SOURCE: Fr. Demande, 19 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2834710	A1	20030718	FR 2002-322	20020111

PRIORITY APPLN. INFO.: FR 2002-322 20020111
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal behavior in air of two Al nanopowders, Alss and Alsstef, a Teflon coated version of Alss, was detd. by using DSC, TG-DTA, and accelerating rate calorimetry (ARC). Compared to two larger Al nanopowders, for which hazards results were reported, Alss and Alsstef are less reactive in air, possibly due to the nature of the passivating and coating layers. The stability of Alss and Alsstef in a wet environment was also investigated by using ARC. Alss is very reactive with water, which could lead to a problem of aging in a humid atm. The "coating" of Alsstef significantly reduces the reactivity of Alss with water. Outgassing behavior of mixts. of ADN, GAP and various Al powders was investigated using TG-DTA-FTIR-MS. No chem. interactions were obsd. between ADN/Al, GAP/Al and ADN/GAP. The effect of the addn. of Al nanopowders on the thermal decompn. of ADN and GAP was studied using ARC. Al nanopowders had a minor effect on the thermal stability of ADN, while the addn. of Alss and Alsstef lowered the onset temp. of GAP. The electrostatic discharge (ESD), impact and friction sensitivities of Al nanopowders and their mixts. with ADN and GAP were also detd. Al nanopowders appear to sensitize ADN to ESD, impact and friction.

ACCESSION NUMBER: 2003:552177 CAPLUS
DOCUMENT NUMBER: 139:119421
TITLE: Hazard characterization of aluminum nanopowder compositions
AUTHOR(S): Jones, David E. G.; Turcotte, Richard; Fouchard, Robert C.; Kwok, Queenie S. M.; Turcotte, Anne-Marie; Abdel-Qader, Zainab
CORPORATE SOURCE: Canadian Explosives Research Laboratory, Ottawa, ON, K1A 0G1, Can.
SOURCE: Propellants, Explosives, Pyrotechnics (2003), 28(3), 120-131
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 4 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A procedure is disclosed for prodn. of a gelled propellant from liq. fuels, propellants, and/or explosives or solid fuels, propellants, and/or explosives dissolved in org. solvents. The solids 1-800 nm diam. (preferably 10-300 nm diam.) are homogeneously dispersed in the liq. by using stirrers or ultrasound. The amt. of the solid particles is 0.5-25 wt.%. On the basis of the structure viscosity, the propellant is easily handled in the viscose state and can be satisfactorily atomized and burned in a controllable way after conversion to the liq. state.

ACCESSION NUMBER: 2003:488634 CAPLUS
DOCUMENT NUMBER: 139:54952
TITLE: Gelled propellant, its production, and use
INVENTOR(S): Teipel, Ulrich; Foerter-Barth, Ulrich; Krause, Horst
PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft Zur Foerderung Der Angewandten Forschung E.V., Germany
SOURCE: Eur. Pat. Appl., 6 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1321505	A2	20030625	EP 2002-27115	20021204
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
DE 10163978	A1	20030710	DE 2001-10163978	20011222
NO 2002006128	A	20030623	NO 2002-6128	20021219

PRIORITY APPLN. INFO.: DE 2001-10163978 A 20011222

L4 ANSWER 5 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review of combustion characteristics and mechanism of ammonium dinitramide (ADN). The relations between burning rate and pressure of ADN were introduced with description of combustion phenomena under different pressures. The exptl. temp. profiles in combustion wave of ADN were collected. Initial thermal decompn. reactions and dark-zone formation mechanisms in ADN combustion were discussed together with the author's anal.

ACCESSION NUMBER: 2003:393521 CAPLUS
DOCUMENT NUMBER: 139:38683
TITLE: Combustion characteristics and mechanisms of ammonium dinitramide
AUTHOR(S): Yang, Rong-jie
CORPORATE SOURCE: Beijing Inst. of Technology, Coll. of Materials Science and Engineering, Beijing, 100081, Peop. Rep. China
SOURCE: Tuijin Jishu (2003), 24(2), 97-103
CODEN: TUJIEG; ISSN: 1001-4055
PUBLISHER: Tuijin Jishu Bianjibu
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Chinese

L4 ANSWER 6 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Gas generant formulations contg. guanidine dinitramide (I) generate substantially entirely 100% water-insol. particulates when combusted. In preferred forms, the gas-generant formulations comprise I as a fuel component and an alk. earth metal nitrate (e.g., strontium nitrate) as an oxidizer component. Low toxicity, high-purity strontium nitrate with a low barium content is esp. preferred as an oxidizer.

ACCESSION NUMBER: 2003:356413 CAPLUS
DOCUMENT NUMBER: 138:371197
TITLE: Gas-generant formulations containing guanidine dinitramide and Group IIA nitrate oxidizers and inflatable devices employing these propellants
INVENTOR(S): Lundstrom, Norman H.; Scheffee, Robert S.; Lynch, Robert D.; Neidert, Jamie B.
PATENT ASSIGNEE(S): Atlantic Research Corporation, USA
SOURCE: PCT Int. Appl., 12 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003037859	A2	20030508	WO 2002-US33886	20021024

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

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PRIORITY APPLN. INFO.: US 2001-330793P P 20011031

L4 ANSWER 7 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Recent work performed at DERA (now QinetiQ) has shown how accelerating rate calorimetry (ARC) can be used to obtain time to max. rate curves by using larger samples of energetic materials. The use of larger samples reduces the effect of thermal inertia, permitting exptl. data to be gathered at temps. closer to those likely to be encountered during manuf., transportation or storage of an explosive device. However, in many cases, extrapolation of the time to max. rate curve will still be necessary. Because of its low detection limit compared to the ARC, heat conduction calorimetry can be used to obtain data points at, or below, the region where an explosive system might exceed its temp. of no return and undergo a thermal explosion. Paired ARC and heat conduction calorimetry expts. were conducted on some energetic material samples to explore this possibility further. Examples of where both agreement and disagreement are found between the two techniques are reported and the significance of these discussed. Ways in which combining ARC and heat conduction calorimetry expts. can enhance, complement and validate the results obtained from each technique are examd.

ACCESSION NUMBER: 2003:324633 CAPLUS
TITLE: Combined use of adiabatic calorimetry and heat conduction calorimetry for quantifying propellant cook-off hazards
AUTHOR(S): Bunyan, P. F.; Griffiths, T. T.; Norris, V. J.
CORPORATE SOURCE: QinetiQ, Centre for Environmental Technology, Kent, TN14 7BP, UK
SOURCE: Thermochimica Acta (2003), 401(1), 17-25
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB This paper is devoted to the investigation of main characteristics and mechanism of combustion of the composite solid-rocket pseudopropellant based on ammonium dinitramide and polycaprolactone. Exptl. data on the dependence of the burning rate on pressure in the pressure range of 4-8 MPa for ammonium dinitramide/polycaprolactone propellant with different additives and with polycaprolactone of different mol. wt. are presented in the paper. The dependence of propellant burning rate on particle size of oxidizer and initial temp. has been also investigated. Compn. of the combustion products of the propellant at pressures of 4 MPa using two different systems of sampling is detd. The temp. profile in the combustion wave of some propellants is obtained with aid of thin flat thermocouples. Temp. of the final combustion products of the propellant without additive and for some propellants with additive is detd. by a thermocouple method. Also the effect of a CuO catalyst on temp. profile is investigated. Flame structure of ammonium dinitramide/polycaprolactone propellant at 0.1 MPa is studied. Data obtained elucidating combustion mechanism and place of action of catalyst are discussed.

ACCESSION NUMBER: 2003:265237 CAPLUS
DOCUMENT NUMBER: 139:71136
TITLE: Study of combustion characteristics of ammonium dinitramide/polycaprolactone propellants
AUTHOR(S): Korobeinichev, Oleg P.; Paletsky, Alexander A.; Tereschenko, Alexander G.; Volkov, Evgeny N.
CORPORATE SOURCE: Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: Journal of Propulsion and Power (2003), 19(2), 203-212
CODEN: JPPOEL; ISSN: 0748-4658
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 9 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A min. signature solid propellant, with reduced emissions of halogen-contg. exhaust gases, contain a polymeric binder, 6.0-9.0, a halogen-free energetic plasticizer 21-25, and ammonium dinitramide oxidizer, with particle size 20-60 .mu.m 55-65 wt.%. An addnl. oxidant may be CL-20. Suitable binders are polycaprolactone, polyglycidyl nitrate, and ORP-2A (energetic polyester); suitable plasticizers include butanetriol trinitrate (BTTN), trimethylolethane trinitrate (TMETN), and N-n-butyl-N-(2-nitroxyethyl)nitramine (BuNENA). Other components include an isocyanate crosslinking agent, a crosslinking catalyst, a stabilizer, a burn rate modifier, and a bonding agent. The exhaust gases of these novel propellants consist mostly of CO2, H2O, N2, and small amts. of CO.

ACCESSION NUMBER: 2003:203040 CAPLUS
DOCUMENT NUMBER: 138:223716
TITLE: Halogen-free minimum-signature composite solid propellant containing energetic binders and plasticizers
INVENTOR(S): Chan, May L.; Turner, Alan D.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 17 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003047260	A1	20030313	US 2001-820374	20010326
PRIORITY APPLN. INFO.:			US 2001-820374	20010326

L4 ANSWER 10 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Investigations on the adsorption of ammonium dinitramide (NH4N(NO2)2) (ADN) from aq. solns. on powd. activated charcoal (PAC) were carried out to find out an effective and easier method of sepg. ADN from aq. solns. The effectiveness of PAC in the selective adsorption of ADN from aq. solns. of ADN (ADN-F) and ADN in presence of SO42- and NO3- (ADN-PS) was examd. and compared using batch and column methods. The adsorption process follows both Langmuir and Freundlich adsorption isotherms and the isotherm parameters for the models were detd. The obsd. data favor the formation of monolayer adsorption. The adsorption capacities were found to be 63.3, 119, 105.3, and 82 mg of ADN per g of PAC for ADN-F (batch), ADN-PS (batch), ADN-F (column), and ADN-PS (column), resp. Break-through curves for ADN-F and ADN-PS were obtained for the optimization of sepn. of ADN from aq. solns. Elution curves were generated for the desorption of ADN from PAC using hot water as eluent.

ACCESSION NUMBER: 2003:176032 CAPLUS
DOCUMENT NUMBER: 138:358811
TITLE: Adsorption of ammonium dinitramide (ADN) from aqueous solutions 1. Adsorption on powdered activated charcoal
AUTHOR(S): Santhosh, G.; Venkatachalam, S.; Ninan, K. N.; Sadhana, R.; Alwan, S.; Abarna, V.; Joseph, M. A.
CORPORATE SOURCE: Propellants and Special Chemicals Group, Vikram Sarabhai Space Centre, Trivandrum, 695022, India
SOURCE: Journal of Hazardous Materials (2003), 98(1-3), 117-126
CODEN: JHMAD9; ISSN: 0304-3894
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 11 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Supercrit. carbon dioxide (scCO2) polymer coating techniques were used for coating of various propellant, explosive, and pyrotechnic (PEP) ingredients. Ammonium dinitramide (ADN), 2,4,6,8,10,12-hexanitrohexaazaisowurtzitane (CL-20), cyclotrimethylenetrinitramine (RDX), and the ballistic modifiers for AA-7 lead free propellant were polymer coated to reduce sensitivity, improve moisture resistance, and improve chem. compatibility with other ingredients. Carbon dioxide (CO2) has modest crit. properties (Tc = 31.degree., Pc = 73.8 bar [1071 psi]) and is non-toxic, non-corrosive, and low-cost. CO2 is an environmentally acceptable solvent for polymer coating applications. It has proven to be a very good solvent for a variety of polymer and copolymers. Coating of ADN and CL-20 reduced their friction and electrostatic discharge (ESD) sensitivity. The AA-7 lead-free propellant uses bismuth subsalicylate (BiS), 1.5%; copper salicylate (CuS), 1.0%; copper stannate (CuSt), 0.77%; and carbon black, 0.1% as the ballistic modifier. The CuS caused stabilizer depletion due to the catalysis of the nitroglycerin (NG). The combination of CuS and BiS has only one half the depletion rate of the copper compd. alone. An unexpected result was obtained with the coated ballistic modifier, the redn. of a stability by the combination of the two (copper and bismuth) was eliminated.

ACCESSION NUMBER: 2003:127853 CAPLUS
DOCUMENT NUMBER: 138:371129
TITLE: Coating of pep ingredients using supercritical carbon dioxide
AUTHOR(S): Nauflett, George W.; Farncomb, Robert E.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: CPIA Publication (2002), 709(19th JANNAF Safety and Environmental Protection Subcommittee Meeting, 2002, Volume 1), 13-19
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 12 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Propellants which avoid the formation of HCl as a combustion product are formulated without halogen-based oxidizers. These propellants, which uses ammonium dinitramide as the primary oxidizer, are composed of an energetic binder 5.0-10.0, an energetic plasticizer 20.0-35.0, ammonium dinitramide 25.0-45.0, and powd. Al (with particle size 1-60 .mu.m, esp. ultrafine Al with particle size <1 .mu.m) 0-20.0 wt.%. The formulations may also contain curing and crosslinking catalysts and agents, burn rate catalysts and modifiers, thermal and aging stabilizers, binders, opacifiers, etc.

ACCESSION NUMBER: 2003:97674 CAPLUS
DOCUMENT NUMBER: 138:155874
TITLE: High-energy propellant with reduced hydrogen chloride pollution containing ammonium dinitramide oxidizer and energetic binders and plasiticizers
INVENTOR(S): Reed, Russell, Jr.; Ciaramitaro, David A.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003024617	A1	20030206	US 2001-872427	20010529
US 6613168	B2	20030902		
PRIORITY APPLN. INFO.:			US 2001-872427	20010529

L4 ANSWER 13 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A gas generating material for a vehicle occupant protection device (e.g., an airbag) consists of 45 wt.% hydroxylammonium 3-nitramino-4-nitrofurazan, 2.5-10 wt.% binder, and enough oxidizer to ensure complete combustion. Suitable binders include cellulose-based binders, polycarbonates, polyurethanes, polyesters, polyethers, polysuccinates, thermoplastic rubber, polybutadiene, polyolefins, polystyrene, ethylene-butene-styrene block copolymer, and cellulose acetate butyrate. Suitable oxidizers are alkali and alk. earth metal nitrates, perchlorates, and chlorates, as well as ammonium perchlorate and ammonium nitrate.

ACCESSION NUMBER: 2003:89674 CAPLUS
DOCUMENT NUMBER: 138:139660
TITLE: (Nitramino)nitrofurazan-based monopropellant smokeless gas generating compositions, especially for airbags
INVENTOR(S): Blomquist, Harold R.
PATENT ASSIGNEE(S): TRW Inc., USA
SOURCE: U.S., 6 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6513834	B1	20030204	US 2000-650935	20000829

PRIORITY APPLN. INFO.: US 2000-650935 20000829
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 14 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Proton transfer in gaseous ammonium dinitramide (ADN) clusters up to (ADN)2 is studied by using d.-functional theory. Proton transfer between the hydrogen dinitramide and ammonia units does not occur in the ADN monomer, rather the ammonia-hydrogen dinitramide complex is stabilized by strong hydrogen bonding. However, proton transfer between hydrogen dinitramide and ammonia is obsd. in the ADN dimer [NH3NH(NO2)2]2, ADN solvated with a single ammonia mol. [NH3NH(NO2)2]NH3, and ADN solvated with a hydrogen dinitramide mol. [NH3HN(NO2)2]HN(NO2)2. Structural changes in the complexes relative to the free mols. and the binding energies of the clusters are given. Using population anal., the total electrostatic interaction energy in each cluster is calcd. The electrostatic energy is a measure that distinguishes between the ionic or hydrogen-bonded nature of the clusters. Some implications of proton transfer in ADN clusters on the decompn. mechanism of ADN are discussed.

ACCESSION NUMBER: 2003:64141 CAPLUS
DOCUMENT NUMBER: 138:260833
TITLE: Proton transfer in gas-phase ammonium dinitramide clusters
AUTHOR(S): Alavi, Saman; Thompson, Donald L.
CORPORATE SOURCE: Department of Chemistry, Oklahoma State University, Stillwater, OK, 74078, USA
SOURCE: Journal of Chemical Physics (2003), 118(6), 2599-2605
CODEN: JCPSA6; ISSN: 0021-9606
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 15 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A method is provided for enhancing the soly. of an ionizable compd. in a lipophilic medium by admixing the compd. with an effective soly.-enhancing amt. of an N,N-dinitramide salt. The ionizable compd., upon ionization, gives rise to a biol. active cationic species that ionically assocs. with the N,N-dinitramide anion N(NO2)2 following admixt. with the N,N-dinitramide salt. The biol. active cationic species may be a pharmacol. active cation, in which case the method is useful for enhancing the penetration of the blood-brain barrier by the pharmacol. active cation. In other embodiments, the ionizable compds. are medical imaging or diagnostic agents, or agricultural agents such as pesticides. Salts of biol. active cations and N,N-dinitramide ion are also provided as novel compns. of matter.

ACCESSION NUMBER: 2003:58011 CAPLUS
DOCUMENT NUMBER: 138:126950
TITLE: N,n-dinitramide salts as solubilizing agents for biologically active agents
INVENTOR(S): Bottaro, Jeffrey C.; Petrie, Mark A.; Penwell, Paul E.; Bomberger, David C.
PATENT ASSIGNEE(S): SRI International, USA
SOURCE: PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003006371	A1	20030123	WO 2002-US21802	20020709
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003026850	A1	20030206	US 2001-905577	20010713

PRIORITY APPLN. INFO.: US 2001-905577 A 20010713
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 16 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

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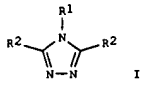

I

AB Novel energetic salts of 1H-1,2,4-triazole have a general formula I, in which R2 and R1 are H or NH2, with the proviso that when R1 = H, R2 = H; X- = NO3-, ClO4-, and N(NO2)-. The salts (which are insensitive and have use as gas-generating compns. and as propellant components) are prepd. in high yield in com. polar solvents at ambient temps. by reaction of the substituted 1H-1,2,4-triazole with the corresponding acid.

ACCESSION NUMBER: 2003:53546 CAPLUS
DOCUMENT NUMBER: 138:92350
TITLE: Novel energetic salts of 1,2,4-triazoles and aminotriazoles as candidate insensitive propellants and gas generators
INVENTOR(S): Drake, Greg W.
PATENT ASSIGNEE(S): United States Dept. of the Air Force, USA
SOURCE: U.S., 6 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6509473	B1	20030121	US 2000-688909	20001016

PRIORITY APPLN. INFO.: US 2000-688909 20001016
OTHER SOURCE(S): MARPAT 138:92350
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 17 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB This paper presents a progress report on studies being made to characterize new, high burning rate materials being considered as potential solid propellant ingredients. The effect of synthesis procedure on the burning rate and burning rate pressure exponent is illustrated for the high nitrogen contg. compd. 3,6-bis(1H-1,2,3,4-tetrazol-5-amino)-2-tetrazine (BTATZ). It appears that the use of DMF in the final synthetic step not only results in higher burning rate materials, but also reduced burning rate pressure exponents. The effect of BTATZ on ammonium dinitramide (ADN) burning rate is illustrated. Burning rates of hydrazinium nitroformate (HNF) obtained from two sources were very comparable. The BTATZ, di-amino-azo-tetrazine (DAAT) N-oxides and HNF are compared to neat burning rate data of more familiar compds. of ADN, hexanitrohexazaisowurtzitane (CL-20), and cyclotetramethylenetetranitramin e (HMX).

ACCESSION NUMBER: 2003:37485 CAPLUS
DOCUMENT NUMBER: 138:340443
TITLE: Window bomb burning rates of BTATZ, DAAT, and HNF
AUTHOR(S): Atwood, A. I.; Bui, D. T.; Curran, P. O.; Ciaramitaro, D. A.; Lee, K. B.
CORPORATE SOURCE: Naval Air Warfare Center Weapons Division, China Lake, CA, 93555, USA
SOURCE: CPIA Publication (2002), 712(38th JANNAF Combustion Subcommittee Meeting, 2002), 119-127
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 18 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Supercrit. carbon dioxide (scCO2) polymer coating techniques were used for coating of various propellant, explosive, and pyrotechnic (PEP) ingredients. Ammonium dinitramide (ADN), 2,4,6,8,10,12-hexanitrohexaazaisowurtzitane (CL-20), cyclotrimethylenetrinitramine (RDX), and the ballistic modifiers for AA-7 lead free propellant were polymer coated to reduce sensitivity, improve moisture resistance, and improve chem. compatibility with other ingredients. Carbon dioxide (CO2) has modest crit. properties (Tc = 31.degree., Pc = 73.8 bar [1071 psi]) and is non-toxic, non-corrosive, and low-cost. CO2 is an environmentally acceptable solvent for polymer coating applications. It has proven to be a very good solvent for a variety of polymer and copolymers. Coating of ADN and CL-20 reduced their friction and electrostatic discharge (ESD) sensitivity. The AA-7 lead-free propellant uses bismuth subsalicylate (BiS), 1.5%; copper salicylate (CuS), 1.0%; copper stannate (CuSt), 0.77%; and carbon black, 0.1% as the ballistic modifier. The CuS caused stabilizer depletion due to the catalysis of the nitroglycerin (NG). The combination of CuS and BiS has only one half the depletion rate of the copper compd. alone. An unexpected result was obtained with the coated ballistic modifier, the redn. of a stability by the combination of the two (copper and bismuth) was eliminated.

ACCESSION NUMBER: 2003:27206 CAPLUS
DOCUMENT NUMBER: 138:340430
TITLE: Coating of pep ingredients using supercritical carbon dioxide
AUTHOR(S): Nauflett, George W.; Farncomb, Robert E.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: CPIA Publication (2002), 708(JANNAF 30th Propellant Development & Characterization Subcommittee Meeting, 2002), 13-19
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 19 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Urotropinium nitrate, N-methylurotropinium azide, dinitramide and azotetrazolate salts were prepd. and fully characterized by anal. and spectroscopic (1H, 13C, 14N NMR, IR, Raman) methods. The structures of all four compds. were detd. using X-ray diffraction techniques and represent new examples of the class of high energy d. materials.

ACCESSION NUMBER: 2003:20450 CAPLUS
DOCUMENT NUMBER: 138:353951
TITLE: Synthesis, characterization, and crystal structures of various energetic urotropinium salts with azide, nitrate, dinitramide and azotetrazolate counter ions
AUTHOR(S): Ang, How-Ghee; Fraenk, Wolfgang; Karaghiosoff, Konstantin; Klapotke, Thomas M.; Noth, Heinrich; Sprott, Joanna; Suter, Max; Vogt, Martin; Warchhold, Marcus
CORPORATE SOURCE: Chemistry Department, National University of Singapore, Singapore, Singapore
SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie (2002), 628(13), 2901-2906
CODEN: ZAACAB; ISSN: 0044-2313
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 138:353951
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 20 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The literature-known, but not fully characterized, silver dinitramide transfer reagents AgN(NO2)2 (1), [Ag(NCCH3)][N(NO2)2] (2), and [Ag(py)2][N(NO2)2] (3) were prepd. and studied by 109Ag, 14N NMR and vibrational spectroscopy (IR, Raman). The poorly understood [Cu(NH3)4][N(NO2)2]2 (4) and [Pd(NH3)4][N(NO2)2]2 (5) also were prepd. and characterized by 14N NMR and vibrational spectroscopy (IR, Raman). The structures of 2-5 also were detd. by x-ray diffraction.

ACCESSION NUMBER: 2003:20449 CAPLUS
DOCUMENT NUMBER: 138:313333
TITLE: Synthesis, characterization, and crystal structures of Cu, Ag, and Pd dinitramide salts
AUTHOR(S): Ang, How-Ghee; Fraenk, Wolfgang; Karaghiosoff, Konstantin; Klapotke, Thomas M.; Mayer, Peter; Noth, Heinrich; Sprott, Joanna; Warchhold, Marcus
CORPORATE SOURCE: Chemistry Department, National University of Singapore, Singapore, Singapore
SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie (2002), 628(13), 2894-2900
CODEN: ZAACAB; ISSN: 0044-2313
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 21 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Combustion stabilizers for ammonium dinitramide-based liq. monopropellants contain 0.1-5 wt.% ammonia, a base weaker than ammonia, or a sterically hindered base, selected from hydrazine, hydroxylamine, urea, allantoin, pyridine and methylpyridines and pyridinamines, aryl amines, and hexamethylenetetramine. In addn. to ammonium dinitramide, the liq. monopropellants contain water and a fuel, selected from org. compds. (preferably methanol, glycine, and glycols).

ACCESSION NUMBER: 2002:927368 CAPLUS
DOCUMENT NUMBER: 138:15045
TITLE: Amines as combustion stabilizers for ammonium dinitramide-based liquid single-base propellants
INVENTOR(S): Anflo, Kjell; Wingborg, Niklas
PATENT ASSIGNEE(S): Svenska Rymdaktiebolaget, Swed.
SOURCE: PCT Int. Appl., 18 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002096832	A1	20021205	WO 2002-SE988	20020523

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: SE 2001-1751 A 20010528
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 22 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A decompn. reactor for liq. ammonium dinitramide-based rocket monopropellants includes a sintering-resistant, high-temp.-stable thermal decompn. catalyst. The reactor consists of a hollow body provided with, from the upstream end, an injector, a heated bed, and a catalyst bed of porous catalyst particles (heat resistant to >1000.degree., preferably >1400.degree.) comprised of a metal hexaaluminate of formula MAl11O18 (M is an alk. earth or rare earth metal, preferably La). The hexaaluminate (as catalyst supports) are prepd. by combined sol-gel and microemulsion techniques, by adding a soln. of an Al alkoxide to a water-in-oil microemulsion contg. a water-sol. salt of M to form a powd. product that is recovered and calcined. Suitable supported thermal decompn. catalysts include Pt, Ru, Pd, Pt/Rh, Ir, Rh, Mn, or Ir/Rh. Typical ammonium nitramide-based monopropellants consist of .apprx.65 wt.% ADN, .apprx.25 wt.% water, and .apprx.10 wt.% MeOH (as added fuel), and include a small amt. (0.5 wt.%) of a weak base stabilizer (urea and hexamine).

ACCESSION NUMBER: 2002:906623 CAPLUS
DOCUMENT NUMBER: 137:386708
TITLE: Reactor and hexaaluminate-based catalysts for thermal decomposition of ammonium dinitramide single-base monopropellants
INVENTOR(S): Groenland, Tor-Arne; Westerberg, Bjoern; Bergman, Goeran; Anflo, Kjell; Brandt, Jesper; Lyckfeldt, Ola; Agrell, Johan; Ersson, Anders; Jaeras, Sven; Buotonnet, Magali; Wingborg, Niklas
PATENT ASSIGNEE(S): Svenska Rymdaktiebolaget, Swed.
SOURCE: PCT Int. Appl., 47 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002095207	A1	20021128	WO 2002-SE992	20020523

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: SE 2001-1847 A 20010523
SE 2001-1852 A 20010523
SE 2001-1751 A 20010528
REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 23 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The crystal structures of two amine base salts of dinitramide, the guanidinium (I) and the hydroxyguanidinium (II), were detd. I crystallizes in the triclinic space group P(1) with cell dimensions a = 8.325(2) .ANG., .beta. = 9.301 (2) .ANG., c = 9.868(2) .ANG., .alpha. = 84.73(3).degree., .beta. = 69.25(3), .gamma. = 67.55(3), while 2 crystallizes in the noncentric monoclinic space group Pc with cell dimensions a = 7.098 (2) .ANG., b = 3.5160 (10) .ANG., c = 14.358(3) .ANG., = 98.940(10). The structures of I and II contain protonated amine cations and dinitramide anions linked by hydrogen bonding. In both structures the conformations adopted by the dinitramine anions can be related to the types of hydrogen bonds it forms with the surrounding amine cations.

ACCESSION NUMBER: 2002:880662 CAPLUS
DOCUMENT NUMBER: 138:207295
TITLE: A new class of flexible energetic salts. Part 7: The structures of the guanidinium and hydroxyguanidinium salts of dinitramide
AUTHOR(S): Gilardi, Richard; Butcher, Ray J.
CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research Laboratory, Washington, DC, 20375, USA
SOURCE: Journal of Chemical Crystallography (2002), 32(11), 477-484
CODEN: JCCYEV; ISSN: 1074-1542
PUBLISHER: Kluwer Academic/Plenum Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 24 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB An oxidizer package for a solid propellant-fueled system consists of a solid oxidizer shaped as discrete pellets of a pre-set geometry and arranged in an array with spaces among the pellets and a holder for maintaining the pellets within the array for uptake of a binder within the spaces among the array of pellets. The oxidizer pellets are pressed from an oxidizer, selected from hydroxylammonium nitrate, ammonium perchlorate, ammonium nitrate, hydroxylammonium perchlorate, nitronium perchlorate, hydrazinium nitroformate, and ammonium dinitramide. Suitable binders are selected from thermoplastic polymers, thermosetting polymers, waxes or greases, an energetic polymer, and a polymd. peroxide. Preferred propellants include hydrazinium nitroformate and nitronium perchlorate.

ACCESSION NUMBER: 2002:833169 CAPLUS
DOCUMENT NUMBER: 137:339659
TITLE: Package for solid propellant-fueled systems containing spaced arrays of oxidizer pellets with binder
INVENTOR(S): Cesaroni, Anthony Joseph; Dennett, Michael J.; Louwers, Jeroen
PATENT ASSIGNEE(S): Cesaroni Technology Incorporated, Can.
SOURCE: U.S. Pat. Appl. Publ., 14 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002157557	A1	20021031	US 2002-44747	20020110

PRIORITY APPLN. INFO.: US 2001-260750P P 20010110

L4 ANSWER 25 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB To measure the solid-propellant combustion temp., a procedure was used based on examn. of the temp. dependence of the Q-branch of the coherent anti-Stokes Raman scattering (CARS) spectrum due to nitrogen contained in combustion products. The measurements were carried out at a pressure of 4 MPa, under which the spectrum demonstrated a substantial overlap between spectral lines. CARS intensities at two frequencies were registered; their ratio was used to det. the combustion temp. of a stoichiometric ammonium dinitramide-polycaprolactone mixt.

ACCESSION NUMBER: 2002:815343 CAPLUS
DOCUMENT NUMBER: 138:306209
TITLE: Measurement of the Combustion Temperature of a Solid Propellant by the CARS Method
AUTHOR(S): Boyarshinov, B. F.; Fedorov, S. Yu.
CORPORATE SOURCE: Siberian Division, Kutateladze Institute of Thermal Physics, Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: Journal of Applied Mechanics and Technical Physics (Translation of Prikladnaya Mekhanika i Tekhnicheskaya Fizika) (2002), 43(6), 925-930
CODEN: JMPYAQ; ISSN: 0021-8944
PUBLISHER: Kluwer Academic/Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 26 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Perforated solid propellant geometric shapes (e.g., as blocks, sticks, slabs, cylinders. and tubes), with a high charge d. and high progressivity (i.e., an increasingly greater burning area with time) are characterized by a large no. of perforations, densely and evenly distributed over the entire propellant segments, made by perforation dies that are pressed down into the propellant. The perforations are made in a no. of steps with a predetd. step feed between each operation. A perforation device comprises a mobile pin die away from but facing the feed path for the propellant, and contains at least one row of pins for perforation of the propellant. Each row of pins comprises the no. of pins required to cover the complete width of the propellant segment across its direction of advance. Between each perforation operation, the propellant is step fed by a step feed device at a distance equiv. to the distance between two desired perforations multiplied by the no. of rows of pins arranged across the direction of advance of the propellant. In addn., the distance between two burning surfaces of the propellant is equal to double the desired burning length. The propellants are typically conventional single-, double-, or multi-base propellants as well as multi-base propellants based on nitramines, dinitramide, dinitromethane, dinitroethylene, and dinitropyridine.

ACCESSION NUMBER: 2002:814076 CAPLUS
DOCUMENT NUMBER: 137:313135
TITLE: Perforation die pressing for fabrication of perforated solid propellants with high charge density and high progressivity in combustion
INVENTOR(S): Dahlberg, Johan; Selin, Lennart
PATENT ASSIGNEE(S): Nexplo Bofors AB, Swed.
SOURCE: PCT Int. Appl., 25 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002083602	A1	20021024	WO 2002-SE622	20020328
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
SE 2001001166	A	20021003	SE 2001-1166	20010402
SE 518867	C2	20021203		

PRIORITY APPLN. INFO.: SE 2001-1166 A 20010402
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 27 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In an effort to increase the performance of solid rocket propellants, new and novel energetic propellant formulations were synthesized and tested. These new propellants were characterized exptl. in order to det. a no. of important ballistic parameters. These parameters include the burning rate characteristics, temp. sensitivity, the Arrhenius form of burning rate law, and the stability behavior in terms of the B. V. Novozhilov (1990) parameters. The samples were tested in an optical strand burner through a broad range of pressures (50 < P < 3,000 psig) and initial temps. (-25 < T < 50.degree.). The burning rate characteristics were detd. through the use of break wires. Propellant burning surface temps. were detd. from the subsurface temp. measurements made by using fine-wire thermocouples. From these measurements, the ballistic parameters mentioned above were deduced. In addn. to the ballistic parameters obtained from strand tests, an instrumented rocket motor was designed and fabricated in order to det. the propulsive behavior of these new propellants. The parameters of interest in these expts. included specific impulse (Isp), and C* efficiency. The rocket motor was equipped with two high-frequency pressure transducers, an ultrasonic transducer for measuring propellant grain regression rate, a piezoelec. load cell for measuring thrust, and a real-time X-ray radiog. system for measuring both instantaneous propellant regression rate and instantaneous exit nozzle throat diam. A no. of system checkout tests were successfully conducted, which demonstrated that the motor was fully operational. Furthermore, several motor tests were conducted with the new energetic propellants, results of these tests are discussed in the paper.

ACCESSION NUMBER: 2002:762029 CAPLUS
DOCUMENT NUMBER: 138:139623
TITLE: Characterization of combustion and propulsive behavior of NF2-based solid propellants
AUTHOR(S): Young, Gregory; Kuo, Kenneth K.
CORPORATE SOURCE: Department of Mechanical and Nuclear Engineering, The Pennsylvania State University, University Park, PA, 16802, USA
SOURCE: CPIA Publication (2001), 705(50th JANNAF Propulsion Meeting, 2001, Vol. 1), 287-303
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 28 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Composite propellant formulations contain an oxidizer, a binder, and 3,6-bis(1H-1,2,3,4-tetrazol-5-ylamino)-1,2,4-5-tetrazine (I) and/or I salts (e.g., diammonium, dihydrazinium, and dihydroxylammonium salts). Suitable oxidizers are selected from alkali metal and alk. earth metal nitrates, perchlorates, dinitramide, amd chlorates; ammonium dinitramide, ammonium nitrate, hydrazinium perchlorate, hydrazinium chlorate, hydrazinium nitrate, hydrazinium dinitramide, and potassium perchlorate. I can be used as a substitute for aluminum in composite HTPB-based (hydroxy-terminated polybutadiene) composite propellants. I was synthesized by nucleophilic substitution of: (1) 3,6-dichloro-1,2,4,5-tetrazine with 1H-1,2,3,4-tetrazole-5-amine, or (2) 3,5-bis(3,5-dimethylpyrazol-1-yl)-s-tetrazine with 1H-1,2,3,4-tetrazole-5-amine.

ACCESSION NUMBER: 2002:746374 CAPLUS
DOCUMENT NUMBER: 137:265190
TITLE: Composite propellants contg. oxidizer, binder, and bis(tetrazolylamino)-s-tetrazine and salts as powd. aluminum substitutes
INVENTOR(S): Hiskey, Michael A.; Chavez, David E.; Naud, Darren
PATENT ASSIGNEE(S): The Regents of the University of California, USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6458227	B1	20021001	US 2000-561309	20000428

PRIORITY APPLN. INFO.: US 2000-561309 20000428
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 29 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A hybrid propulsion system for rockets is composed of a liq. fuel section, consisting of an aq. soln. of H2O2 (or a stream of decompd. H2O2), and a solid fuel section, in which the H2O2-contg. stream is injected onto the solid fuel section at elevated temp. to induce combustion of the fuel grain in the solid fuel section. Other components of the propulsion system include: (1) a decompn. catalyst for H2O2, (2) storage stabilizers for the H2O2 soln. (e.g., chelating agents), (3) ammonium dinitramide or hydrazinium nitroformate (in the H2O2 soln.), (4) solid oxidizers (e.g., chlorate, perchlorate, and nitrate salts), (5) hydrogen-active metals, and (6) energetic fillers (e.g., RDX, HNIW, HMX), plasticizers (BTTN, TMETN, etc.), and polymers (GAP, BAMO/AMMO copolymer, etc.). Suitable decompn. catalysts for H2O2 are Pt, Ag, Pt- or Ag-coated Ni, KMnO4, or MnO2.

ACCESSION NUMBER: 2002:674382 CAPLUS
DOCUMENT NUMBER: 137:203516
TITLE: Hydrogen peroxide-based liquid-solid fuel hybrid propellant systems for rockets
INVENTOR(S): Cesaroni, Anthony J.; Dennett, Michael J.
PATENT ASSIGNEE(S): Cesaroni Technology Incorporated, Can.
SOURCE: U.S. Pat. Appl. Publ., 7 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002121081	A1	20020905	US 2002-44473	20020110

PRIORITY APPLN. INFO.: US 2001-260697P P 20010110

L4 ANSWER 30 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In conventional metathetical reactions, product sepn. is based on soly. product differences, and the resulting products are often impure and require purifn. by recrystn. A new approach to product sepn. is described that relies on the formation of an unstable, volatile byproduct, such as NH4+CH3O-. This method provides very pure and anhyd. products in high yield and was demonstrated successfully for the syntheses of anhyd. cesium salts.

ACCESSION NUMBER: 2002:608529 CAPLUS
DOCUMENT NUMBER: 137:345085
TITLE: An improved method for product separation in metathetical reactions and its demonstration for the synthesis of anhydrous cesium salts
AUTHOR(S): Haiges, Ralf; Christe, Karl O.
CORPORATE SOURCE: University of Southern California, Los Angeles, CA, USA
SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie (2002), 628(8), 1717-1718
CODEN: ZAACAB; ISSN: 0044-2313
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 31 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The heat of reactions of free dinitramidic acid (HN(NO2)2) with derivs. of 2,4-(R)-2,6,8,12-tetraoxa-4,10-diazatetracyclo[5.5.0.05.903.11]dodecane (R=H, F, CH3, NO2 (TEX)) were calcd. using d. functional theory at the B3LYP/6-31+G(d,p) level of theory. These reactions should yield new high energy d. materials (HEDM) based on cationic TEX derivs. and dinitramidic anions. The first proton affinities of the TEX derivs. are in a range between (-178.2) and (-218.3) kcal.cntdot.mol-1. The second proton affinities range from (-80.3) to (-112.4) kcal.cntdot.mol-1. Therefore, 1:1 salts should easily be formed. All calcd. structures of the mono- and dicationic species and all neutral species represent true min. (NIMAG=0) at the B3LYP/6-31+G(d,p) level of theory. The heats of detonation of the 1:1 and also for the 1:2 salts in the solid state were studied theor. The compds. that were identified as the most promising HEDM's were the salts of TEX (R=NO2) with the dinitramidic anion (1:1-450.8 kcal.cntdot.mol-1; 1:2 -719.7 kcal.cntdot.mol-1). The heat of formation of the 1:1 salt [TEXH]+[N(NO2)2]- was calcd.

ACCESSION NUMBER: 2002:605695 CAPLUS
DOCUMENT NUMBER: 138:237660
TITLE: New high energy density materials (HEDM) based on derivatives of 2,4-dinitro-2,6,8,12-tetraoxa-4,10-diazatetracyclo[5.5.0.05,903,11] dodecane cations and dinitramidic anions
AUTHOR(S): Schutt, Thomas; Ang, How Ghee; Klapotke, Thomas M.
CORPORATE SOURCE: Department of Chemistry, National University of Singapore, 117543, Singapore
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 141/1-141/12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 32 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB New ingredients (fuels) for the pyrotechnic gas generators were synthesized and characterized by a thermochem. est. of the combustion of binary (fuel-oxidant) mixts. For this purpose, some fragments of high energy materials were replaced by less energetic and more suitable for safe gas generation subunits. In general, keto derivs. of energetic heterocyclic compds. were emphasized. Combustion was carried out in the presence of ammonium nitrate, ammonium dinitramide, and sodium nitrate oxidizers.

ACCESSION NUMBER: 2002:605683 CAPLUS
DOCUMENT NUMBER: 138:58339
TITLE: Synthesis of organic high nitrogen compounds as pyrotechnic gas-generating ingredients
AUTHOR(S): Sheremetev, Aleksei B.; Yudin, Igor L.; Makhova, Nina N.; Ovchinnikov, Igor V.; Lempert, David B.
CORPORATE SOURCE: N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, 119991, Russia
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 128/1-128/12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 33 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In the last years ammonium dinitramide, ADN, appeared to be a promising new oxidizer and a possible substitute for ammonium nitrate, AN, and esp. for the chlorinated oxidizer ammonium perchlorate. Among others main advantages of ADN are the higher energy input combined with a reduced pressure for decompg. Furthermore ADN shows no phase transitions like AN.

For judging the purity of the synthesized and/or treated or aged pure or formulated ADN so far the estd. ammonium nitrate content was taken into account. AN is known to be a byproduct of the ADN synthesis as well as a possible decompn. product of ADN. Thermally treated ADN decomps. mainly to N2O, H2O, NO2, and AN which further reacts to N2O and NH3. So detg. the nitrate contents assuming the rest is intact ADN must not lead to true values esp. in cases where ADN was treated/handled at higher temps. in open systems. Concerning the synthesis of ADN tech.-scale moreover the precursor ammonium nitrourethane, ANU must be eliminated in a quick but sufficient way needing a suitable anal. method for detecting nitrourethane besides nitrate and ADN. Objective of this work was to develop a suitable ion chromatog. method for the direct anal. of the anions concerned. Different ion exchanger phases were tested with org. and/or inorg. eluents. The ionic strength and flow rate of the eluent was improved to get an acceptable resoln. for nitrite and nitrate combined with a short run time for the whole anal. Detection was realized by elec. cond. or UV absorption whereby the measurement wavelengths were optimized in order to get a small signal to noise ratio and simultaneously a suitable sensitivity esp. for NO3 and nitrourethane. Under improved conditions (ion Pac 11, 1 mL/min NaOH, 300 mmol) limits of detection, LOD of 0,05-0,01 ppm were realized for NO3 and NO2 resp. measured at 214 nm. Using 220 nm as detection wavelength resulted in a LOD of about 0,3 ppm for nitrate. Using a wavelength between 210-220 nm results in a LOD for ANU of about 1 ppm. Linearity range for the anal. of DN- (285 nm) was found to be very broad (up to 700 ppm). All anions can be analyzed in one run taking maximal 30 min.

ACCESSION NUMBER: 2002:605664 CAPLUS
DOCUMENT NUMBER: 138:41505
TITLE: Analysis of ADN, it's precursor and possible byproducts using ion chromatography
AUTHOR(S): Bunte, Gudrun; Neumann, Heinz; Antes, Juergen; Krause, Horst
CORPORATE SOURCE: Fraunhofer-Institut fuer Chemische Technologie (ICT), Pfinztal, 76327, Germany
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 117/1-117/14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 34 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Flame structure and combustion mechanism of ammonium dinitramide(ADN)/polycaprolactone (PCL) composite solid propellant were studied at 0.1 MPa by micro-thermocouple technique, probe mass spectrometry, and videotape recording. Two types of PCL with mol. wt. of 10000 (later on PCL(10000)) and 1250 (PCL(1250)) were used. Besides, an effect of CuO additive on propellant burning rate was investigated. Combustion of ADN/PCL strands was dependent on type of polycaprolactone. In the case of PCL(10000) propellant strands burned without visible flame with low temp. of combustion products, whereas ADN/PCL(1250) showed a non-homogeneous non-stationary combustion with formation of luminous torches. Three zones of chem. reactions in flame were detected. Vapor of ADN, products of decompn. of the oxidizer and binder, and also products of their interaction were obsd. near the burning surface. It was shown that the compn. of nitrogen-contg. species in dark flame zone of ADN/PCL(1250) at 0.1 MPa is close to that of pure ADN at 0.6 MPa. Complete compn. of combustion products in luminous flame zone was also detd. It was established that burning rate of ADN/PCL(1250) propellant (as in the case of pure ADN and ADN/HTPB propellant) is controlled by reactions in condensed phase. Computer modeling of chem. reactions in the dark flame zone by using exptl. data on compn. and temp. of species near the burning surface was conducted. The calcd. temp. and concns. of species in flame were compared with exptl. data. Obtained data on flame structure of ADN/PCL propellant can be used for development of combustion model of this propellant.

ACCESSION NUMBER: 2002:605645 CAPLUS
DOCUMENT NUMBER: 138:41476
TITLE: Flame structure and combustion chemistry of ammonium dinitramide/polycaprolactone propellant
AUTHOR(S): Korobeinichev, Oleg P.; Volkov, Evgeny N.; Paletsky, Alexander A.; Bolshova, Tatyana A.; Tereschenko, Alexander G.
CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion, Siberian Branch of Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 104/1-104/14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 35 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review of known non metallic dinitramide oxidizers, that is dinitramide salts with a pos. oxygen balance. Presently six such salts are identified. Among them hydroxylammonium dinitramide, HADN, has the highest oxygen balance. Due to this and the fact that it is poorly investigated, efforts where made to synthesize it to be able to characterize some of its properties. The results however, indicate that HADN do not exist at ambient condition. The reason might be that hydroxylamine is a to week base. By adding two equiv. of hydroxylamine to one equiv. of dinitramide a white cryst. substance was formed. Anal. identified the substance to be hydroxylammonium-hydroxylamine dinitramide, SRI-14. Its m.p. and enthalpy of melting was found to be 84.degree. and 200 J/g resp. At a heating rate of 10.degree./min, SRI-14 starts to decomp. at approx. 150.degree., as is the case for many dinitramide salts.

ACCESSION NUMBER: 2002:605625 CAPLUS
DOCUMENT NUMBER: 138:41461
TITLE: Non metallic dinitramide oxidisers
AUTHOR(S): Wingborg, Niklas; Johansson, Martin
CORPORATE SOURCE: Grindsjoen Research Centre, FOI, Swedish Defence Research Agency, FOI, Tumba, SE-147 25, Swed.
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 91/1-91/10
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 36 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Thermoanal. investigations on advanced oxidizer-binder system viz., ammonium dinitramide (ADN) and glycidyl azide polymer (GAP) were carried out by thermogravimetry (TG), and differential scanning calorimetry (DSC) techniques. The phenomenol. and kinetic aspects of the thermal decompn. of ADN, GAP and ADN-GAP mixt.(3:1 by wt.) were evaluated from TG and DSC data. The effect of heating rate on the above parameters was studied. The melting of ADN at 92.+-.2.degree. is followed by its decompn. in the temp. range of 145-225.degree.. GAP decomps. exothermically in the range of 195-255.degree.. ADN-GAP mixt. shows single stage decompn. in the range of 140-190.degree.. The kinetic parameters viz., activation energy E, and pre-exponential factor A, for the thermal decompn. were evaluated by variable program rate T. Ozawa (1975, 1976) and H. E. Kissinger (1956) methods. The activation parameters for all the three systems were also evaluated by the integral Coats-Redfern equation for a comparison. Based on the thermo anal. data it is inferred that the decompn. of ADN and GAP is mutually catalyzed in the mixt.

ACCESSION NUMBER: 2002:605586 CAPLUS
DOCUMENT NUMBER: 138:41490
TITLE: Thermal decomposition kinetic studies on ammonium dinitramide (ADN)-glycidyl azide polymer (GAP) system
AUTHOR(S): Santhosh, G.; Venkatachalam, S.; Francis, A. U.; Krishnan, K.; Catherine, Korah Bina; Ninan, K. N.
CORPORATE SOURCE: Propellants and Special Chemicals Group, Vikram Sarabhai Space Centre, Trivandrum, 695 022, India
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 64/1-64/14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 37 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB This investigation was conducted with the purpose to evaluate ammonium perchlorate, ammonium nitrate, ammonium dinitramide, and hydrazinium nitroformate as potential oxidizers in the compn. of solid rocket propellants. The investigation included thermodn. anal. of combustion products of propellants made on the basis of these components, exptl. investigation of ammonium dinitramide-based propellants, and comparison of various characteristics of the propellants being considered. Ammonium dinitramide at present represents a real ammonium perchlorate alternative as a component of solid rocket propellants. Its use can essentially reduce cost of putting into orbit a payload mass unit, at the same time diminishing the ecol. damage made by the operation of the carrier missile. The scope of problems, soln. of which should ensure the development of highly efficient ammonium dinitramide-based propellants is defined.

ACCESSION NUMBER: 2002:605509 CAPLUS
DOCUMENT NUMBER: 138:26479
TITLE: Solid rocket propellants on the basis of ammonium dinitramide. Problems and perspective applications
AUTHOR(S): Babuk, Valery A.; Vasilyev, Viacheslav A.; Molostov, Dmitry B.
CORPORATE SOURCE: Baltic State Technical University, St. Petersburg, 198005, Russia
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 21/1-21/15
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 38 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB HNIW and ADN are new energetic charges for smokeless, low vulnerability and low polluting propellants. Thermogravimetric anal., differential scanning calorimetry, thermal diffusivity measurements are used to get thermal and kinetic consts. of these charges and their degrdns. The linear pyrolysis method under vacuum is applied to the study of the condensed phase degrdn. from these charges. This method provides the propellant regression while completely quenching the gas phase reactions. The condensed phase degrdn. produces mainly nitrogenated gaseous species (and only from HNIW, complementary hydrocarbon species) which are analyzed by mass spectrometry. Various solid residues are analyzed and identified by IR spectrometry and elemental anal. Three types of combustion expts., such as temp. profile from very fine thermocouples imbedded in the sample giving the regression surface temp., the slope in the gas phase and sometimes the flame temp., such as regression under laser fluxes giving the ignition delay and such as combustion rate measurements by the ultra sonic method, are giving well fitted combustion laws of theses propellant compds. All these results are compared with those extd. from the literature. They complete the knowledge of the complex phenomena, related to these charges, occurring during the propellant combustion.

ACCESSION NUMBER: 2002:605490 CAPLUS
DOCUMENT NUMBER: 138:41470
TITLE: Study of the condensed phase degradation and combustion of two new energetic charges for low polluting and smokeless propellants : HNIW and ADN
AUTHOR(S): Hommel, Jean; Trubert, Jean-Francois
CORPORATE SOURCE: Applied and Fundamental Energetics Department, ONERA, Chatillon, 91220, Fr.
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 10/1-10/17
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 39 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review of methods of producing ammonium dinitramide (ADN) prills abroad in recent years. Actions of intermedia, dispersant, surface active agent, and stabilizer on ADN, and methods of selecting these auxiliary agents are discussed.

ACCESSION NUMBER: 2002:590484 CAPLUS
DOCUMENT NUMBER: 138:6180
TITLE: Study on prilling process of ammonium dinitramide (ADN)
AUTHOR(S): Ma, Yue; Zhang, Hai-lin
CORPORATE SOURCE: The 42nd Institute, The Fourth Academy of CASC, Xiangfan, 441003, Peop. Rep. China
SOURCE: Guti Huojian Jishu (2002), 25(2), 59-62
CODEN: GHJIFL; ISSN: 1006-2793
PUBLISHER: Guti Huojian Jishu Bianjibu
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Chinese

L4 ANSWER 40 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB For the calcn. of the performance parameters of combustion processes, equil. thermodn. processes are taken into account. On the other hand, non-equil. reactions occur, mostly connected with low pressure burning. In this paper, several explosives, explosive mixts., solid and liq. propellants are calcd. It is shown how energy output and gas formation depend on the oxygen balance and the enthalpy of formation. The reason for the higher specific energy of liq. propellants is due to the increased formation of gases consisting of H2, N2, and H2O, compared with conventional solid propellants based on nitrocellulose and nitroglycerin, which produce more CO and CO2. Non-equil. combustion of solid propellants was found at very low loading densities or pressures lower than 1-2 MPa. In this case, the reaction products measured by mass spectrometry, such as NO, N2O and HCN, are metastable and highly toxic, producing a much lower heat of explosion compared with equil. burning measured and calcd.

ACCESSION NUMBER: 2002:540858 CAPLUS
DOCUMENT NUMBER: 137:372211
TITLE: Performance parameters of explosives: equilibrium and non-equilibrium reactions
AUTHOR(S): Volk, Fred; Bathelt, Helmut
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie ICT, Pfinztal, D-76327, Germany
SOURCE: Propellants, Explosives, Pyrotechnics (2002), 27(3), 136-141
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 41 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In the last years ammonium dinitramide (ADN) appeared to be a promising new oxidator and a possible substitute for ammonium nitrate (AN) and esp. for the chlorinated oxidizer ammonium perchlorate. Among other main advantages of ADN are to be mentioned the higher energy input combined with a reduced pressure in application. Furthermore, ADN shows no phase transitions like AN. For evaluating the purity of the synthesized and/or treated or aged pure or formulated ADN, the estd. ammonium nitrate content was taken into account. AN is known to be as well a byproduct of the ADN synthesis as a possible decompn. product of ADN. Thermally treated ADN decomps. mainly to N2O, H2O, NO2 and AN which further reacts to N2O and NH3. Detg. the nitrate contents assuming the rest being intact ADN must not lead to correct values esp. in cases where ADN was treated/handled at higher temps. in open systems. Concerning the tech. scale synthesis of ADN, the precursor ammonium nitrourethane (ANU) must be eliminated in a quick but sufficient way needing a suitable anal. method for detecting nitrourethane besides nitrate and ADN. The objective of this work was to develop a suitable ion chromatog. method for the direct anal. of the anions concerned. Different ion exchanger phases were tested with org. and/or inorg. eluants. The ionic strength and flow rate of the eluant was improved to get an acceptable resoln. for nitrite and nitrate combined with a short run time for the whole anal. Detection was realized by elec. cond. or UV absorption whereby the measurement wavelengths were optimized in order to get a small signal-to-noise ratio and simultaneously a suitable sensitivity esp. for NO3- and nitrourethane. Under improved conditions (Ion Pac 11, 1 mL/min NaOH, 300 mmol), limits of detection (LOD) of 0.05 to 0.01 ppm were realized for NO3- and NO2-, resp., measured at 214 nm. Using 220 nm as detection wavelength resulted in a LOD of about 0.3 ppm for nitrate. Using a wavelength between 210 and 220 nm results in a LOD for ANU of about 1 ppm. The linearity range for the anal. of DN- (285 nm) was found to be very broad (up to 700 ppm). All anions can be analyzed in one run taking maximally 30 min.

ACCESSION NUMBER: 2002:540856 CAPLUS
DOCUMENT NUMBER: 137:372209
TITLE: Analysis of ADN, its precursor and possible by-products using ion chromatography
AUTHOR(S): Bunte, Gudrun; Neumann, Heinz; Antes, Jurgen; Krause, Horst H.
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie ICT, Pfinztal, D-76327, Germany
SOURCE: Propellants, Explosives, Pyrotechnics (2002), 27(3), 119-124
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 42 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A useful method to sep. the impurities from the ammonium dinitramide (ADN) product and to det. the purity of the ADN product is presented. The results show that MIBK not only is an effective solvent to sep. the ammonium nitrate (AN) impurities, but also is a good medium to chem. titrate the ADN. Both precision and accuracy of the purity anal. are good, the coeff. of variation is .ltoreq. 0.19%, the relative deviation of the results is .ltoreq. 0.25%.

ACCESSION NUMBER: 2002:522984 CAPLUS
DOCUMENT NUMBER: 137:313129
TITLE: Separation of the impurities and analysis of the purity for the ammonium dinitramide product
AUTHOR(S): Lin, Xiu-rong
CORPORATE SOURCE: Hubei Red Star Chemical Institute, Xiangfan, 441003, Peop. Rep. China
SOURCE: Hanneng Cailiao (2002), 10(2), 88-90
CODEN: HACAFQ; ISSN: 1006-9941
PUBLISHER: Hanneng Cailiao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 43 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Nitration of ammonium sulfamate was carried out using a mixt. of H2SO4 and HNO3 at -30 to -40.degree.. The mole ratio of H2SO4 to HNO3 was varied from 0 to 4 and the extent of formation of ammonium dinitramide (ADN) was measured. The initial yield of ADN increases with increase of H2SO4 content in the acid mixt. and starts decreasing as the reaction time is increased. The variation of product yield with change in reaction time and total acid concn. was studied.

ACCESSION NUMBER: 2002:508067 CAPLUS
DOCUMENT NUMBER: 137:225800
TITLE: Study on the formation of dinitramide using mixed acid nitrating agents
AUTHOR(S): Santhosh, G.; Venkatachalam, S.; Kanakavel, M.; Ninan, K. N.
CORPORATE SOURCE: Polymers and Special Chemicals Division, Vikram Sarabhai Space Centre, Trivandrum, 695 022, India
SOURCE: Indian Journal of Chemical Technology (2002), 9(3), 223-226
CODEN: ICHTEU; ISSN: 0971-457X
PUBLISHER: National Institute of Science Communication
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 44 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Energetic compns. for gas generators, for inflation of vehicle airbags, consist of an org. azide or org. nitrogen fuel, an oxidant (esp. ammonium perchlorate), a chloride scavenger, a plasticizer, and a polymeric binder consisting of the reaction of an acrylic polymer resin or a polyester resin (optionally crosslinked with a polyisocyanate). Suitable org. fuels include nitroguanidine, guanidine nitrate, aminoguanidine nitrate, oxamide, dicyandiamide, guanyl urea dinitramide, and metal cyanamides. Suitable chloride scavengers include NaNO3, CaCO3, Li2CO3, KNO3, Sr(NO3)2, Ba(NO3)2, KClO3, CuO, and KCl4. The compn. is prepd. by introduction of solid and liq. components into an elongated mixing tube via different openings, to form a homogeneous paste. The paste is then degassed and then extruded into a rod and cut to cylinders, which are then charged to the airbag inflation unit.

ACCESSION NUMBER: 2002:486172 CAPLUS
DOCUMENT NUMBER: 137:65357
TITLE: Polymeric binders for gas-generating compositions for inflation of vehicle airbags
INVENTOR(S): Charrette, Dimitri; Chounet, Georges
PATENT ASSIGNEE(S): SNPE, Fr.
SOURCE: Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1216977	A2	20020626	EP 2001-403255	20011214
EP 1216977	A3	20020911		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
FR 2818636	A1	20020628	FR 2000-16879	20001222
FR 2818636	B1	20030228		
US 2002079031	A1	20020627	US 2001-3082	20011206
BR 2001006250	A	20020813	BR 2001-6250	20011221
JP 2002255679	A2	20020911	JP 2001-389917	20011221

PRIORITY APPLN. INFO.: FR 2000-16879 A 20001222

L4 ANSWER 45 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The electron d. and related properties of biguanidinium dinitramide (BIGH)(DN) and biguanidinium bis-dinitramide (BIGH2)(DN)2 crystals (space groups P.hivin.1 and C2/c) have been detd. from low-temp. [90(1) K] X-ray diffraction expts. The Hansen-Coppens multipole model as implemented in the XD program gave R = 0.0247 and 0.0201 (all reflections) which allowed the calcn. of the electron d. and Laplacian distributions. The bonding (3,-1) crit. points were also found. The anal. of the results shows that Bader's topol. theory provides a more useful description of the chem. bonding in the studied crystals as compared to the classical anal. of deformation densities. The hydrogen bonding in the crystals was analyzed.

The at. charges were integrated over the at. basins.

ACCESSION NUMBER: 2002:469820 CAPLUS
DOCUMENT NUMBER: 137:154657
TITLE: Chemical Bonding in Biguanidinium Dinitramide and Biguanidinium Bis-Dinitramide from Experimental X-ray Diffraction Data
AUTHOR(S): Zhurova, Elizabeth A.; Martin, Anthony; Pinkerton, A. Alan
CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo, OH, 43606, USA
SOURCE: Journal of the American Chemical Society (2002), 124(29), 8741-8750
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 46 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The vapor pressure and heat of evapn. are detd. in thermal decompn. of ammonium dinitramide in a two-temp. flow reactor at 80-140.degree.. The mechanism of thermal decompn. including the evapn. stage (i.e., transition from the condensed to the gaseous state in the form of mol. complex NH3.HN(NO2)2 with subsequent decompn. to NH3 and HN(NO2)2) of the ammonium dinitramide is detd. on the basis of the obtained results. The compn. of thermal decompn. products of the ammonium dinitramide vapor is detd. by mass spectrometry at 160-900.degree.. The effective thermal decompn. rate of the ammonium dinitramide vapor is detd. at 160-320.degree.. The mol. thermal decompn. of the ammonium dinitramide vapor is carried out in a flow reactor on the basis of suggested mechanism by using the detd. decompn. rate consts.

ACCESSION NUMBER: 2002:460361 CAPLUS
DOCUMENT NUMBER: 137:313117
TITLE: Study of thermal decomposition of ammonium dinitramide (ADNA) vapor in a two-temperature flow reactor
AUTHOR(S): Shmakov, A. G.; Korobeinichev, O. P.; Bol'shova, T. A.
CORPORATE SOURCE: Inst. Khim. Kinetiki i Goreniya, SO RAN, Novosibirsk, 630090, Russia
SOURCE: Fizika Goreniya i Vzryva (2002), 38(3), 37-47
CODEN: FGVZA7; ISSN: 0430-6228
PUBLISHER: Izdatel'stvo Sibirskogo Otdeleniya RAN
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 47 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB An instrument of a relatively simple construction is applied to det. the elec. spark sensitivity (EES) of polynitro compds. and inorg. azides. Attention was focused also on the relation between the EES values and granulometry of RDX and HMX, and on the dependence of these values on the content of hard admixts. to RDX (up to 15% by wt.). Relations are found between the resulting EES values and the values of this sensitivity detd. by means of other types of app. and in other labs. These relations are strongly affected by mol.-structure factors and construction differences between the individual testers. An attempt is presented at specification of the relation between the EES of azides and their heats of explosion (Q). The value of Q = 2.472 kJ g-1 for mercury(II) azide is estd. from this relationship.

ACCESSION NUMBER: 2002:437874 CAPLUS
DOCUMENT NUMBER: 137:249847
TITLE: Notices to determination of the electric spark sensitivity of energetic materials
AUTHOR(S): Koci, Jiri; Zeman, Svatopluk; Majzlik, Jiri; Strnad, Jiri
CORPORATE SOURCE: Department of Theory & Technology of Explosives, University of Pardubice, Pardubice, CZ-532 10, Czech Rep.
SOURCE: New Trends in Research of Energetic Materials, Proceedings of the Seminar, 5th, Pardubice, Czech Republic, Apr. 24-25, 2002 (2002), 110-126. Editor(s): Vagenknecht, Jiri. University of Pardubice: Pardubice, Czech Rep.
CODEN: 69CSE3; ISBN: 80-7194-435-1
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 48 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The development of microthrusters for microspacecraft applications was an important task for the aerospace industry. The design of a first prototype microthruster and results of preliminary tests with gaseous reactants in small combustion chambers are presented. The use of electrolytic ignition techniques are discussed for the initiation of the liq. propellant. The propellant formulations included an energetic oxidizer, an alc. fuel, and H2O as liq. carriers. A moderate propellant of the compn. 35% H2O, 50% hydrazinium nitroformate and 15% MeOH is presented. The microthruster was fabricated from alumina, but also mullite could be used due to its excellent thermal shock properties and compatibility with the liq. propellant.

ACCESSION NUMBER: 2002:437562 CAPLUS
DOCUMENT NUMBER: 137:65343
TITLE: Development of a liquid propellant microthruster for small spacecraft
AUTHOR(S): Yetter, R. A.; Yang, V.; Milius, D. L.; Aksay, I. A.; Dryer, F. L.
CORPORATE SOURCE: Department of Mechanical and Nuclear Engineering, The Pennsylvania State University, University Park, PA, 16802, USA
SOURCE: Chemical and Physical Processes in Combustion (2001) 377-380
CODEN: CPPCD9; ISSN: 0277-1128
PUBLISHER: Combustion Institute
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 49 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Several platinum, rhodium or palladium supported catalysts are prepd. focusing the thermal stability in oxidizing atm.; the stability is improved by adding doping elements to the support. The catalytic activity is detd. in a lab. batch reactor and from thermal anal. The catalytic tests by using HAN-TEAN-H2O mixts. led to lower pressure increases than the calcd. values. Without the presence of a catalyst, the thermal decompn. reaction started at 115.degree., leading to the formation of gaseous products and condensed polymn. products. In the presence of the best catalyst, the onset of the decompn. is lowered to .apprx. 70.degree.. The presence of CH2-CH2 fragments in the fuel part of the monopropellant is an impediment to a full decompn. into gaseous products. The replacement of TEAN by urea or glycine led to blended monopropellants displaying poorer catalytic decompn. at low temps. Binary HAN-water mixt. gave results similar to the decompn. of propellant contg. TEAN. The comparison of different propellant components was made on the basis of calcd. adiabatic temp. and specific impulse. The more energetic oxidizer is HNF.

ACCESSION NUMBER: 2002:406525 CAPLUS
DOCUMENT NUMBER: 136:403843
TITLE: Decomposition of different monopropellants at laboratory level methodology, experimental results and performance calculations. Application to HAN based propellants and H2O2
AUTHOR(S): Eloirdi, Rachel; Rossignol, Sylvie; Duprez, Daniel; Kappenstein, Charles; Pillet, Nicolas; Melchior, Antoine
CORPORATE SOURCE: Catalyse par les Metaux, Universite de Poitiers, Poitiers, 86022, Fr.
SOURCE: European Space Agency, [Special Publication] SP (2001), SP-484(Proceedings of the First International Conference on Green Propellants for Space Propulsion, 2001), 148-155
CODEN: ESPUD4; ISSN: 0379-6566
PUBLISHER: ESA Publications Division
DOCUMENT TYPE: Journal; (computer optical disk)
LANGUAGE: English
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 50 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The benefits of advanced HNF monopropellants are discussed. The areas of consideration comprise the operational and performance aspects, the general handling, the benign less-toxic characteristics and the envisaged redn. of manufg., test and operational costs. The recently proposed developments and applications of advanced monopropellants for satellite propulsion are considered. Besides HNF monopropellants, others can be considered like ammonium dinitramide (ADN) and hydroxyl ammonium nitrate (HAN). The evaluation of the parameter matrix justifies the selection of HNF as promising alternative as a less-toxic monopropellant for satellite propulsion. The selection of HNF is mainly based on the fact that HNF offers a higher potential performance growth than other monopropellants. The specific propulsion issues with the application of HNF are presented on both component and system level. The thruster has to cope, among other aspects, with catalyst compatibility and long-term stability. The system components like the feed lines, tanks and others need verification. The GSE however might be simplified significantly. The application of HNF offers a high potential of operational advantages and justifies the required efforts for the introduction and the development of HNF in satellite propulsion.

ACCESSION NUMBER: 2002:406524 CAPLUS
DOCUMENT NUMBER: 136:403842
TITLE: Industrial benefits of applying HNF in monopropellant satellite propulsion
AUTHOR(S): Fick, M.; Schiebener, P.; Moerel, J. L. P. A.; van den Berg, R. P.; Sanders, H. M.; Welland-Veltmans, W. H. M.
CORPORATE SOURCE: Astrium GmbH, Lampoldshausen, Germany
SOURCE: European Space Agency, [Special Publication] SP (2001), SP-484(Proceedings of the First International Conference on Green Propellants for Space Propulsion, 2001), 138-147
CODEN: ESPUD4; ISSN: 0379-6566
PUBLISHER: ESA Publications Division
DOCUMENT TYPE: Journal; (computer optical disk)
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 51 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The present paper describes the effort to develop a novel storable liq. monopropellant for space applications based on ammonium dinitramide, ADN. A previous paper has described the propellant formulation, basic properties of ADN and possible propellant compns. based on ADN. With low toxicity, handling safety, and high performance as driving criterion, a baseline propellant consisting of 61% ADN, 26% water, and 13% glycerol was formulated and tested. Other ADN-based propellant blends have also been formulated and tested. This paper contains a discussion on propellant candidates and testing of different propellant blends with emphasis on combustion stability and pulse performance. The outcome of the tests performed is that combustion stability can be significantly improved by both modifying the rocket engine design and the propellant compn. Pulses between 0.3 s and approx. 1 min have been run, and consecutive restarts have been demonstrated under ambient and vacuum conditions. The present paper does also discuss some of the most crit. issues in the development of a rocket engine and a propulsion system for ADN-based propellants. The major issues in this context are long-lived catalyst bed or an alternative ignition method and high temp. resistant materials. The combustion temp. of ADN-based propellants is in the 2000 K range.

ACCESSION NUMBER: 2002:406522 CAPLUS
DOCUMENT NUMBER: 136:403841
TITLE: ADN-based monopropellants-A green propellant candidate
AUTHOR(S): Anflo, K.; Gronland, T. A.; Westerberg, B.; Wingborg, N.
CORPORATE SOURCE: Swedish Space Corporation, Solna, SE-171 04, Swed.
SOURCE: European Space Agency, [Special Publication] SP (2001), SP-484(Proceedings of the First International Conference on Green Propellants for Space Propulsion, 2001), 128-137
CODEN: ESPUD4; ISSN: 0379-6566
PUBLISHER: ESA Publications Division
DOCUMENT TYPE: Journal; (computer optical disk)
LANGUAGE: English
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 52 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A sampling method is described for detn. of amt. of combustion products of solid rocket fuel mixts. at 2500-3200 K and 4-8 MPa at the conditions close to those of rocket engines. A two-stage device that enables to freeze the sample with bypassing the shock wave in the sampler is described. The sampling accuracy is verified by math. modeling of gas dynamics of the flow and kinetics of chem. reaction. The relative variation of concn. in most stable gas components during sampling from flames is < 3% and in H2 and O2 is 12%. The possibility of sepn. of CO and N2 from the sample with subsequent anal. in time-of-flight mass spectrometer is considered. The concn. of CO and CO2 in the combustion products of ammonium dinitramide solid propellant with polycaprolactone is detd. at 4 MPa.

ACCESSION NUMBER: 2002:404088 CAPLUS
DOCUMENT NUMBER: 137:156842
TITLE: Probe method for sampling of combustion products of solid rocket fuel at temperatures and pressures typical of a rocket engine combustion chamber
AUTHOR(S): Tereshchenko, A. G.; Korobeinichev, O. P.; Skovorodko, P. A.; Paletskii, A. A.; Volkov, E. N.
CORPORATE SOURCE: Inst. Khim. Kinetiki i Goreniya, SO RAN, Novosibirsk, 630090, Russia
SOURCE: Fizika Goreniya i Vzryva (2002), 38(1), 92-104
CODEN: FGVZA7; ISSN: 0430-6228
PUBLISHER: Izdatel'stvo Sibirskogo Otdeleniya RAN
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 53 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The crystal structure of the energetic compd., [Ni(en)3][N(NO2)2]2, and the conformations of the dinitroamide anions which depend on the nature of the cation and on their geometrical size and shape were investigated. Since crystn. leads to differently shaped crystals, an x-ray diffraction anal. for the overall product of crystn. was performed. Conformational anal. of N(NO2)2- anions in the compd. showed that the steric and electronic factors in each anion, which are comparable in energy, lead to different orientations of the planes of the nitroamine groups relative to the plane of the three nitrogen atoms.

ACCESSION NUMBER: 2002:395857 CAPLUS
DOCUMENT NUMBER: 137:171927
TITLE: Crystal structure of the energy compound tris(ethylenediamine) nickel (II) dinitroamidate [Ni(en)3][N(NO2)2]2
AUTHOR(S): Romanenko, G. V.; Varand, V. L.; Podberezskaya, N. V.; Naumov, D. Yu.; Gromilov, S. A.; Larionov, S. V.
CORPORATE SOURCE: Institute of Inorganic Chemistry, Siberian Branch, Russian Academy of Sciences, Russia
SOURCE: Journal of Structural Chemistry (Translation of Zhurnal Strukturnoi Khimii) (2001), 42(6), 1036-1039
CODEN: JSTCAM; ISSN: 0022-4766
PUBLISHER: Kluwer Academic/Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 54 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A method of producing prilled ADN with liq. org. compd. as medium is presented. Hygroscopicity, particle size distribution, impact sensitivity, friction sensitivity, and surface structure of prilled ADN are studied. The prilled ADN has lower hygroscopicity and sensitivity than flake or needle ADN. Prilled ADN with particle sizes from 5-800 .mu.m can be produced in this way.

ACCESSION NUMBER: 2002:363573 CAPLUS
DOCUMENT NUMBER: 137:187780
TITLE: Study on prilled ammonium dinitramide (ADN)
AUTHOR(S): Ma, Yue; Zhang, Hai-lin
CORPORATE SOURCE: The 42nd Institute of Fourth Academy of CASC, Xiangfan, 441003, Peop. Rep. China
SOURCE: Guti Huojian Jishu (2002), 25(1), 29-32
CODEN: GHJIFL; ISSN: 1006-2793
PUBLISHER: Guti Huojian Jishu Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 55 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Study of the hydrolysis of N,N'-dinitrourea resulted in the development of convenient procedures for synthesizing nitramide on the basis of urea. New reactions of nitramide were examd.

ACCESSION NUMBER: 2002:282984 CAPLUS
DOCUMENT NUMBER: 137:169116
TITLE: Chemistry of urea nitro derivatives: II. Synthesis of nitramide from N,N'-dinitrourea. New reactions of nitramide
AUTHOR(S): Lobanova, A. A.; Il'yasov, S. G.; Popov, N. I.; Sataev, R. R.
CORPORATE SOURCE: Altai Federal Research and Production Center, Biisk, 659322, Russia
SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (2002), 38(1), 1-6
CODEN: RJOCEQ; ISSN: 1070-4280
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 137:169116
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 56 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB At. interactions between oxygen atoms have been analyzed in terms of the AIM for the biguanidinium dinitramide and biguanidinium bis-dinitramide crystals. The electron d. has been derived from X-ray diffraction data obtained at 90 K, and the potential energy d. has been calcd. using the d. functional approach. Bond crit. points have been found on the O(1).cntdot..cntdot..cntdot.O(4) interat. line in both the electron d. and potential energy d. gradient fields. The bond path and its assocd. virial path have been obtained. The interaction has been identified as a bonding closed-shell type interaction.

ACCESSION NUMBER: 2002:259505 CAPLUS
DOCUMENT NUMBER: 137:11174
TITLE: Characterizing the Oxygen-Oxygen Interaction in the Dinitramide Anion
AUTHOR(S): Zhurova, Elizabeth A.; Tsirelson, Vladimir G.; Stash, Adam I.; Pinkerton, A. Alan
CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo, OH, 43606, USA
SOURCE: Journal of the American Chemical Society (2002), 124(17), 4574-4575
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 121 THERE ARE 121 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 57 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB FOX-12, or N-guanylurea dinitramide, is a novel energetic material with low sensitivity and good potential for use as a propellant or insensitive munitions (IM) explosive. This paper reports its synthesis, sensitivity (friction and drop wt.), thermal stability and explosion temp., as well as its bulk crystal d. (.rho.=1.7545 g/cm3, by powder x-ray anal.), and its heat of formation (.DELTA.H.degree.f=-355 kJ/mol, by bomb calorimetry). The activation energy (Ea=277 kJ/mol) was measured with a differential scanning calorimeter (DSC). The ignition temp. was measured using Wood's metal bath (Tign=192 .degree.C). Using a thermo-chem. code (Cheetah 1.40) and the exptl. detd. values of d. and heat of formation, the performance was estd.

ACCESSION NUMBER: 2002:152473 CAPLUS
DOCUMENT NUMBER: 136:388118
TITLE: N-guanylurea-dinitramide: a new energetic material with low sensitivity for propellants and explosives applications
AUTHOR(S): Ostmark, H.; Bemm, U.; Bergman, H.; Langlet, A.
CORPORATE SOURCE: FOI, Energetic Materials Department, Swedish Defence Research Agency, Stockholm, SE-172 90, Swed.
SOURCE: Thermochimica Acta (2002), 384(1-2), 253-259
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 58 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal stabilities of 3,6-dihydrazido-1,2,4,5-tetrazine (Hz2Tz) and its salts with diperchlorate [Hz2Tz(HClO4)2], dinitrate [Hz2Tz(HNO3)2], bisdintramidate [Hz2Tz(HDN)2] [where HDN is HN(NO2)2], and bisdinitroimidazolate [Hz2TzBim] were examd. and compared to other 3,6-disubstituted tetrazines. The neutral tetrazines exhibited two principal modes of decompn.: elimination of N2 from the tetrazine ring followed by cleavage of the remaining N-N bond, and loss of the substituent group, in some cases assisted by proton transfer. The salts Hz2TzX2 undergo reversible equil. with the parent Hz2Tz and HX, thus, in several cases the decompn. rate of the parent tetrazine and the salt are essentially identical.

ACCESSION NUMBER: 2002:152460 CAPLUS
DOCUMENT NUMBER: 137:22072
TITLE: Thermal decomposition of high-nitrogen energetic compounds-dihydrazido-S-tetrazine salts
AUTHOR(S): Oxley, Jimmie C.; Smith, James L.; Chen, Heng
CORPORATE SOURCE: Chemistry Department, University of Rhode Island, Kingston, RI, 02881, USA
SOURCE: Thermochimica Acta (2002), 384(1-2), 91-99
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 59 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The low temp. thermal stability of ammonium dinitramide (ADN) and efforts to improve the thermal stability are presented. The decompn. rates of ADN at 60, 70, 80, and 90.degree. were investigated. Several potential thermal stabilizers were investigated to suppress the low temp. decompn. (60-90.degree.) of ADN. The potential stabilizers investigated were potassium fluoride, potassium dinitramide, a 6-member ring or polymeric phosphorous compd. [P(C6H5)]6,polymer, and perhydro-1,3,5-triazine-2,4,6-trione, commonly known as Verkade's super base (VC). Comparison of the decompn. of pure ADN and 1-2% by mass mixts. of ADN and the potential stabilizers are presented. Finally, the low temp. stabilizers are compared to hexamethylene tetramine (commonly known as urotropine or hexamine). Verkade's super base is most effective.

ACCESSION NUMBER: 2002:152456 CAPLUS
DOCUMENT NUMBER: 137:22065
TITLE: Thermal stability of ammonium dinitramide
AUTHOR(S): Mishra, Indu B.; Russell, T. P.
CORPORATE SOURCE: Department of Chemistry, Howard University, ASEE Summer Visiting Faculty, Washington, DC, 20059, USA
SOURCE: Thermochimica Acta (2002), 384(1-2), 47-56
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 60 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A rapid and simple method to det. the purity of ADN was studied. The expt. was carried out with non-aq. potentiometric titrn. into MI and a quaternary ammonium salt was used as the titrant, while AN, the major impurity present in ADN, which tends to cause serious interference was removed by MI. The std. deviation of the method is 0. 0019 and its coeff. of variation is 0.19%.

ACCESSION NUMBER: 2002:143924 CAPLUS
DOCUMENT NUMBER: 136:388130
TITLE: Purity determination of ammonium dinitramide
AUTHOR(S): Ma, Xin-gang; Lin, Xiu-rong
CORPORATE SOURCE: The 42nd Institute of the Fourth Academy of CASC, Xiangfan, 441003, Peop. Rep. China
SOURCE: Guti Huojian Jishu (2001), 24(4), 56-58, 61
CODEN: GHJIFL; ISSN: 1006-2793
PUBLISHER: Guti Huojian Jishu Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 61 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The synthesis of guanidine dinitramide (GDN) by the reaction of ADN and guanidine salt is studied. Its structure is identified by IR and UV spectrum anal. and its properties are measured. The properties of GDN are superior to those of ADN and NG.

ACCESSION NUMBER: 2002:143923 CAPLUS
DOCUMENT NUMBER: 136:388129
TITLE: Synthesis and properties test of a new energetic compound guanidine dinitramide
AUTHOR(S): He, Jin-xuan; Yang, Tong-hui; Zhang, Hai-lin
CORPORATE SOURCE: The 42nd Institute of the Fourth Academy of CASC, Xiangfan, 441003, Peop. Rep. China
SOURCE: Guti Huojian Jishu (2001), 24(4), 53-55
CODEN: GHJIFL; ISSN: 1006-2793
PUBLISHER: Guti Huojian Jishu Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 62 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Today, the market of space development is involved in international competition. This causes strict requirements for the technologies such as solid rocket motor to acquire higher performance with reduced cost. The potential is described of energetic materials- based compns. as the most promising candidates for the future propellants. The expected performance and the major tech. issues for the development are also discussed.

ACCESSION NUMBER: 2002:114308 CAPLUS
DOCUMENT NUMBER: 136:327739
TITLE: Future propellant
AUTHOR(S): Maruizumi, Haruki
CORPORATE SOURCE: Res. & Development Center, IHI Aerospace Co., Ltd., 21-1, Matobashinmachi, Kawagoe-shi, Saitama-ken, 350-1107, Japan
SOURCE: Explosion (2001), 11(3), 158-162
CODEN: EXPLED
PUBLISHER: Nippon Kayaku Kogyokai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

L4 ANSWER 63 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ammonium nitrate is prepd. with good smoke properties and improves energy loss characteristics upon using potassium dinitramide as the phase stabilizer. Ammonium nitrate and potassium dinitramide are dissolved in a solvent (e.g., water, DMF, and DMSO) together to give a satd. soln., followed by addn. of a miscible solvent as the pptg. agent (e.g., nitriles, ethers, arom. compds., halogenated hydrocarbons) to recover the ammonium nitrate. Thus, 65.7 wt.% ammonium nitrate, 5.7 wt.% potassium dinitramide, and 28.6 wt.% water were mixed to give a satd. aq. soln., followed by addn. of acetonitrile, and stirred for 1 h to give the phase-stabilized ammonium nitrate.

ACCESSION NUMBER: 2002:110330 CAPLUS
DOCUMENT NUMBER: 136:120703
TITLE: Purification of phase-stabilized ammonium nitrate by addition of potassium dinitramide
INVENTOR(S): Kim, Jun Hyung; No, Man Kyun; Seo, Tae Seok
PATENT ASSIGNEE(S): Agency for Defence Development, S. Korea
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2000015463	A	20000315	KR 1998-35390	19980829
PRIORITY APPLN. INFO.:			KR 1998-35390	19980829

L4 ANSWER 64 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The oxidizers contain hydroxylammonium nitrate and hydrazinium nitroformate, ammonium dinitramide, NH4NO3, and/or H2O2. The propellants contain 5-15% of solid fuels and 95-85% of the oxidizers. The oxidizers have low m.p. and high b.p. for easy handling at wide temp. region, low corrosivity and toxicity, and long-term storage stability.

ACCESSION NUMBER: 2002:63421 CAPLUS
DOCUMENT NUMBER: 136:104714
TITLE: Liquid oxidizers and their use in hybrid propellants for rockets
INVENTOR(S): Takishita, Yukio; Shibamoto, Hidefumi; Onda, Toshio; Kuwahara, Takao
PATENT ASSIGNEE(S): Hosoya Fireworks Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002020191	A2	20020123	JP 2000-201567	20000703
PRIORITY APPLN. INFO.:			JP 2000-201567	20000703

L4 ANSWER 65 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Invention proposes fire-extinguishing compns. contg. dinitramide salts and/or their mixt. with alkali and/or alkali-earth metal and ammonium nitrates and/or perchlorates as an oxidizer for use as various-destination rocket fuels. Such rocket fuels contain a thermally scattered component 0.2-5.0, the oxidant 70.0-76.0, a binder 8.0-14.0, and additives 10.8-20.0 wt.%.

ACCESSION NUMBER: 2002:58908 CAPLUS
DOCUMENT NUMBER: 136:87996
TITLE: Application of fire-extinguishing compositions as rocket fuel
INVENTOR(S): Perepechenko, B. P.; Korobenina, T. P.; Pak, Z. P.; Shishov, N. I.
PATENT ASSIGNEE(S): Russia
SOURCE: Russ., No pp. given
CODEN: RUXXE7
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2157270	C2	20001010	RU 1998-119144	19981023
PRIORITY APPLN. INFO.:			RU 1998-119144	19981023

L4 ANSWER 66 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB In this article, ammonium dinitramide (ADN) was prepd. from acrylonitrile and the mechanism of 2,2'-dicyanoethanyl amine was discussed and the best reaction condition was studied.

ACCESSION NUMBER: 2001:917845 CAPLUS
DOCUMENT NUMBER: 136:249824
TITLE: Studies on synthesis of ADN. II
AUTHOR(S): Zhang, Zhi-zhong; Wang, Bo-zhou; Zhu, Chun-hua; Shi, Zun-chang; Jia, Yue-mei
CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xi'an, 710065, Peop. Rep. China
SOURCE: Hanneng Cailiao (2001), 9(3), 97-99
CODEN: HACAFQ; ISSN: 1006-9941
PUBLISHER: Hanneng Cailiao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 67 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The influence of reaction conditions on the formation of ammonium dinitramide, NH4N(NO2)2, by conversion of N2O5 with NH3 was studied and the reaction system was modeled. A system of 3 overall reactions of N2O5 with NH3 was postulated, of which only 1 leads to NH4N(NO2)2 (besides 2 equivs. of NH4NO3). Kinetic modeling leads to a model which describes the selectivity for NH4N(NO2)2 in good agreement with exptl. data. It shows that the selectivity is dependent on the concn. ratio of the educts, but not on their abs. concns.

ACCESSION NUMBER: 2001:913792 CAPLUS
DOCUMENT NUMBER: 136:104628
TITLE: Modeling of the reaction of ammonia with dinitrogen pentoxide for synthesis of the halogen-free ammonium dinitramide for solid rocket fuels
AUTHOR(S): Frenck, Christian; Weisweiler, Werner
CORPORATE SOURCE: Inst. Chem. Tech., Univ. Karlsruhe, Karlsruhe, D-76128, Germany
SOURCE: Chemie Ingenieur Technik (2001), 73(11), 1401-1407
CODEN: CITEAH; ISSN: 0009-286X
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: German
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 68 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review on the use of microencapsulation technol. to improve the processing, handling and storage characteristics of particulate energetic materials. Various material systems have been developed and tested for suitability as coatings for energetic materials. The following material systems, consisting of a core material and outer wall material, were found to be suitable for the encapsulation process: ammonium dinitramide (ADN) coated with cellulose acetate butyrate (CAB); hexanitrohexaazaisowurtzitane coated with cellulose acetate phthalate; and tetramethylene tetranitramine (HMX) coated with amino resin. Results show that glass particles with a mean diam. of 50 .mu.m could be coated with stearyl stearate in a fluidized-bed using supercrit. carbon dioxide as a carrier fluid and solvent of the coating. Comprehensive characterization of these materials is required to assess the quality of these coatings and to improve the process.

ACCESSION NUMBER: 2001:908885 CAPLUS
DOCUMENT NUMBER: 136:123993
TITLE: Microencapsulation of particulate materials
AUTHOR(S): Teipel, U.; Heintz, T.; Krober, H.
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal, 76318, Germany
SOURCE: Powder Handling & Processing (2001), 13(3), 283-288
CODEN: PHAPER; ISSN: 0934-7348
PUBLISHER: Trans Tech Publications
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 69 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Visual flame characteristics, burning rates, and final flame temps. for propellants based on ammonium dinitramide (ADN) and hydroxyl-terminated polybutadiene (HTPB) at different HTPB concns. (3-20%) are studied at pressures of 0.05-0.6 MPa. The flame structure was studied by probing mol.-beam mass-spectrometry, thin thermocouples, and video recording. The burning-zone width at 0.1 MPa was .apprx.1.5 mm. Thermocouples revealed temp. fluctuations of about .+-.400 K at 0.1 MPa in the flame zone within 1.5-4 mm from the burning surface. Along with temp. fluctuations, fluctuations also occurred in the intensities of the mass peaks of mass spectra of samples withdrawn from the flame. These are a consequence of the nonhomogeneous and nonstationary combustion of the propellant. Video recordings revealed the existence of several brightly luminous flame jets (torches) of .apprx. 1 mm in diam. at the burning surface, disappearing from one site and re-appearing at another. Combustion products are found remote from the burning surface and in its immediate vicinity by using mol.-beam mass spectrometry. The reactions in the condensed phase (mainly the ADN decompn. reaction) control ADN/HTPB propellant combustion. The oxidn. of HTPB decompn. products in the gas phase increases the heat release there and accelerates reactions in the first and second zones of the ADN flame.

ACCESSION NUMBER: 2001:875725 CAPLUS
DOCUMENT NUMBER: 136:186273
TITLE: Flame structure of ADN/HTPB composite propellants
AUTHOR(S): Korobeinichev, Oleg P.; Paletsky, Alexander A.
CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion, Siberian Branch Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: Combustion and Flame (2001), 127(3), 2059-2065
CODEN: CBFMAO; ISSN: 0010-2180
PUBLISHER: Elsevier Science Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 70 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Single salts of energetic acids with methylene bis(oxyamine), CH2(ONH2)2.nHX (HX = HNO3, HClO4, H2N-NH-NH2, and HC(NO2)3; n = 1 or 2), were synthesis in good to high yields and characterized by vibrational (IR and Raman) and NMR (1H and 13C) spectroscopies, and differential scanning calorimetry and thermogravimetry. The single-crystal x-ray diffraction pattern of the diperchlorate salt was also carried out. In addn., safety studies (impact and friction sensitivities) were carried out on most of the new materials, as well as the thermal stabilities of the salts at 75.degree.. Initial thermal stability studies indicated a high thermal sensitivity and ruled out any future plans for incorporation into propellants. Small-scale safety tests showed that many of the new compds. were quite sensitive and would not be safe to handle on a large scale.

ACCESSION NUMBER: 2001:810918 CAPLUS
DOCUMENT NUMBER: 136:104694
TITLE: The synthesis and characterization of methylene bisoxyamine CH2(-O-NH2)2 salts
AUTHOR(S): Tollison, Kerri; Drake, Greg; Hawkins, Tom; Brand, Adam; McKay, Milton; Ismail, Ismail; Merrill, Claude; Petrie, Mark; Bottaro, Jeff; Highsmith, Thomas; Gilardi, Richard
CORPORATE SOURCE: AFRL/PRSP and ERC, Inc., Edwards Air Force Base, CA, 93524-7190, USA
SOURCE: Journal of Energetic Materials (2001), 19(4), 277-303
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 71 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB An exptl. study of aluminized solid rocket propellant combustion was conducted in order to det. the effect of various propellant formulation factors on metal agglomeration. The results allowed to det. the dependencies of the agglomeration process characteristics on the phys. and mech. properties of the propellant binder, the particle size of the metal fuel, the type of film covering the original metal particles, and the type of oxidizer in the propellant. These results, combined with earlier data, were used to develop a phys. picture of the agglomeration process, which may serve as the basis for conducting anal. of the effect of various propellant formulation factors on agglomeration.

ACCESSION NUMBER: 2001:781816 CAPLUS
DOCUMENT NUMBER: 136:56018
TITLE: Propellant formulation factors and metal agglomeration in combustion of aluminized solid rocket propellant
AUTHOR(S): Babuk, V. A.; Vassiliev, V. A.; Sviridov, V. V.
CORPORATE SOURCE: Baltic State Technical University, St. Petersburg, Russia
SOURCE: Combustion Science and Technology (2001), 163, 261-289
CODEN: CBSTB9; ISSN: 0010-2202
PUBLISHER: Gordon & Breach Science Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 72 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The flame structure of composite propellants and sandwiches based on ammonium dinitramide (ADN) and glycidyl azide polymer at 0.015-0.3 MPa was studied by mol. beam mass spectrometry. A zone near the surface, .apprx.1.5 mm wide, was detected, where reactions occur. The gas compn. near the surface of burning ADN laminae at 0.1 MPa was close to that near the surface of burning pure ADN at 0.3 MPa. Among the species responsible for reactions in the flame near the surface, the most probable are HNO3, dinitraminic acid, and the vapor of ADN. The luminous zone of the flame extends more than 10 mm from the surface. The compn. of the final combustion products has been detd. by freezing at the temp. of liq. nitrogen and indicates incomplete combustion. The temp. profiles measured with thin thermocouples confirm the measured widths of the near-surface and luminous zones. The final temp. at the pressure of 0.3 MPa is as high as 2600 K.

ACCESSION NUMBER: 2001:701900 CAPLUS
DOCUMENT NUMBER: 136:8601
TITLE: Mass spectrometric study of combustion of GAP- and ADN-based propellants
AUTHOR(S): Kuibida, L. V.; Korobeinichev, O. P.; Shmakov, A. G.; Volkov, E. N.; Paletsky, A. A.
CORPORATE SOURCE: Russian Academy of Science, Institute of Chemical Kinetics and Combustion, Novosibirsk, 630090, Russia
SOURCE: Combustion and Flame (2001), 126(3), 1655-1661
CODEN: CBFMAO; ISSN: 0010-2180
PUBLISHER: Elsevier Science Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 73 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB An app. for inflating an airbag includes: (1) a container which contains a combustible material that consists of a binder selected from cellulose acetate butyrate and cellulose acetate propionate, in which a first binder has a m.p. of 230-260.degree. and a second binder with a m.p. of 125-205.degree., (2) an igniter for the combustible material, and (3) a conduit for conducting the hot combustion gases from the igniter to the main charge of combustible material, which then inflates the airbag. Other suitable binders include cellulose acetate and nitrocellulose. The binders have a glass transition temp. of <165.degree.. The combustible igniter may also contain a non-metallic nitrogen compd. (e.g., nitroguanidine, triaminoguanidine nitrate, ethylene dinitramine, ethylenediamine dinitrate, 1,3,3-trinitroazetidine, RDX, HMX, TNT, 2,4,6-trinitrophenylmethylnitramine, and PETN), and an oxidizer (e.g., ammonium nitrate, alkali metal and alk. earth metal nitrates, ammonium perchlorate, ammonium dinitramide, quaternary ammonium nitrate, and alkali metal and alk. earth metal perchlorates).

ACCESSION NUMBER: 2001:643325 CAPLUS
DOCUMENT NUMBER: 135:197582
TITLE: Combustible igniter composition for solid propellants for airbag inflation containing high-melting-point organic binders
INVENTOR(S): Mangum, Michael G.; Ouart, David C.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001017175	A1	20010830	US 1997-969028	19971112
US 6368431	B2	20020409		
PRIORITY APPLN. INFO.:			US 1997-969028	19971112

L4 ANSWER 74 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The crystal structures of 2 amine base salts, the hydrazinium (I) and the hydroxylammonium (II) of dinitramide were detd. Compd. I crystallizes in the monoclinic space group P21/n with a 8.312(3), b 5.654(1), c 10.659(3) .ANG., .beta. = 93.73(3).degree., Z = 4, dc = 1.848 for 857 obsd. reflections with Fo > 4.sigma.(Fo), R(F) = 0.0387, wR(F2) = 0.0936 (I > 2.sigma.(I)), while II crystallizes in the orthorhombic space group Pcab (nonstandard setting of Pbca) with a 6.439(2), b 12.470(4), c 30.816(14) .ANG., Z = 8, dc = 1.859 for 1051 obsd. reflections with Fo > 4.sigma.(Fo), R(F) = 0.0479, wR(F2) = 0.0810 (I > 2.sigma.(I)). The structures of I and II contain protonated amine cations and dinitramide anions linked by H-bonding. In addn., in II there are both neutral and zwitterionic hydroxylamine moieties involved in the H-bonding scheme. Thus in II the complete formula unit is (NH3+OH)2[N3O4-]2.(NH2OH).(NH3+O-), and in this structure the hydroxylamine exists in its 3 possible forms: protonated, neutral, and zwitterionic. In both structures the conformations adopted by the dinitramine anions can be related to the types of H-bonds it forms with the surrounding amine cations.

ACCESSION NUMBER: 2001:629299 CAPLUS
DOCUMENT NUMBER: 135:350771
TITLE: A new class of flexible energetic salts. Part 6. The structures of the hydrazinium and hydroxylammonium salts of dinitramide
AUTHOR(S): Gilardi, Richard; Butcher, Ray J.
CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research Laboratory, Washington, DC, 20375, USA
SOURCE: Journal of Chemical Crystallography (2000), 30(9), 599-604
CODEN: JCCYEV; ISSN: 1074-1542
PUBLISHER: Kluwer Academic/Plenum Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS FORMAT
RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 75 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ammonium dinitramide (ADN) is a new energetic material that can be used as an oxidizer in solid rocket propellants. In the last few years, a no. of papers devoted to the study of ADN combustion mechanism have been published. Mol. beam mass-spectrometry and thermocouple measurements are here used to study ADN flame structure at pressures of 0.3 and 0.6 MPa. Measurements include species concns. and temp. profiles. A general mechanism for describing the chem. reactions in an ADN flame (172 reactions and 31 species) is developed based on these exptl. studies and literature data. The scheme includes a sub-mechanism (98 reactions and 22 species) for propellants combustion suggested by R. Yetter and F. Dryer (1992). The latter is further supplemented by a set of 74 reactions, including 63 steps suggested by Lin and Park and the ADN dissocn. reactions suggested by the authors of this paper. The correlation between the exptl. and calcn. results is satisfactory.

ACCESSION NUMBER: 2001:625712 CAPLUS
DOCUMENT NUMBER: 135:290891
TITLE: Modeling the chemical reactions of ammonium dinitramide (ADN) in a flame
AUTHOR(S): Korobeinichev, O. P.; Bolshova, T. A.; Paletsky, A. A.
CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion, Siberian Branch Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: Combustion and Flame (2001), 126(1/2), 1516-1523
CODEN: CBFMAO; ISSN: 0010-2180
PUBLISHER: Elsevier Science Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS FORMAT
RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 76 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB This paper is devoted to the investigation of the main combustion characteristics of a model composite solid rocket propellant based on ammonium dinitramide (ADN) and polycaprolactone in the pressure range of 4.0-8.0 MPa. Polycaprolactone with mol. wt. (MW) of 10.000, pCLN(10.000), and polycaprolactone diol with MW of 1.250, pCLN(1250), were used. Exptl. data on the dependence of burning rate on pressure for an ADN/pCLN propellant of stoichiometric compn. and for this propellant with different additives are presented in paper. Oxides of copper and lead in the range of 1-2% were used as catalytic additives. Another oxidizers (ammonium perchlorate, ammonium nitrate), cyclic nitramines (RDX, HMX) and aluminum in the amt. of 10% were used as energetic additives. The dependence of the propellant burning rate on the initial temp. has been investigated. Compn. of the combustion products of the propellant with and without aluminum at pressures of 4.0 and 8.0 MPa has been detd. Temp. of the final combustion products of the propellant without an additive and for some propellants with an additive has been detd. by a thermocouple method.

ACCESSION NUMBER: 2001:605134 CAPLUS
DOCUMENT NUMBER: 135:332982
TITLE: Study of combustion characteristics of the ADN-based propellants
AUTHOR(S): Korobeinichev, Oleg P.; Paletsky, Alexander A.; Tereshenko, Alexander G.; Volkov, Evgeny N.; Lyon, J. Michael; Carver, James G.; Stanley, Robert L.
CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion SB RAS, Novosibirsk, 630090, Russia
SOURCE: International Annual Conference of ICT (2001), 32nd(Energetic Materials), 123/1-123/14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS FORMAT
RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 77 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Several properties of ammonium dinitramide (ADN) concerning the recrystn. process from melting were investigated. The surface tension of molten ADN at 97.degree. was measured to 89 mN/m. The wetting-angles between molten ADN and different solid surfaces (polytetrafluoro ethylene, glass, steel and Al) were detd. The wettability depends on the surface tension of molten ADN, the free surface energy of the solid surfaces and the interfacial tension between solid and liq. Observations of the recrystn. behavior of molten ADN showed that there is no nucleation even at supercooling rates of 70 K. It is possible to start crystn. by the application of seed crystals.

ACCESSION NUMBER: 2001:605073 CAPLUS
DOCUMENT NUMBER: 135:228911
TITLE: On the crystallization of ammonium dinitramide
AUTHOR(S): Teipel, U.; Heintz, T.
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal, 76327, Germany
SOURCE: International Annual Conference of ICT (2001), 32nd(Energetic Materials), 49/1-49/12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: German
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 78 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The gas-generating pyrotechnic compn. for airbags contains guanylureadinitramide 5-95, guanidine dinitramide .ltoreq.90, an O donor 5-50, and optionally a binder .ltoreq.10 wt.%. The O donor compd.(s) is(are) selected from groups of (1) nitrates, perchlorates, and permanganates of alkali metals, (2) oxides of Fe, Ni, Co, and Mn, and (3) oxides of transition metals.

ACCESSION NUMBER: 2001:594523 CAPLUS
DOCUMENT NUMBER: 135:139394
TITLE: Gas-generating composition for automobile airbags
INVENTOR(S): Persson, Svante; Sjoeqvist, Conny
PATENT ASSIGNEE(S): Bofors BEPAB AB, Swed.
SOURCE: Swed., 15 pp.
CODEN: SSXXAY
DOCUMENT TYPE: Patent
LANGUAGE: Swedish
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SE 514335	C2	20010212	SE 1998-4610	19981230
SE 9804610	A	20000701		

PRIORITY APPLN. INFO.: SE 1998-4610 19981230

L4 ANSWER 79 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The basics of microencapsulation techniques are described together with the different process variants. Expts. are reported concerning the coating of water-sol. and insol. materials using the phase sepn. (coacervation) technique. The following systems were investigated: ammoniumdinitramide coated with ethylcellulose, ammoniumdinitramide coated with cellulose acetobutyrate, hexanitrohexaazaisowurtzitane coated with cellulose acetylphthalate, and tetramethylenetetranitramine coated with an amino resin. Furthermore, the coating of glass spheres with a mean diam. of 50 .mu.m with stearyl stearate was investigated in a lab.-scale high-pressure fluidized-bed app. with CO2 as the supercrit. fluid.

ACCESSION NUMBER: 2001:565791 CAPLUS
DOCUMENT NUMBER: 135:259227
TITLE: Microencapsulation of reactive materials
AUTHOR(S): Heintz, T.; Krober, H.; Teipel, U.
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal, 76318, Germany
SOURCE: Schuettgut (2001), 7(1), 27-32
CODEN: SCHUF8; ISSN: 0946-7939
PUBLISHER: Trans Tech Publications
DOCUMENT TYPE: Journal
LANGUAGE: German
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 80 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal behavior of fifteen nitrosubstituted azetidines, 3,3-dinitroazetidinium dinitramide, 3,3-dinitroazetidinium nitrate, 3,3-dinitroazetidinium nitroform salt, 3,3-dinitroazetidinium-3,5-dinitrobenzoate, 3,3-dinitroazetidinium picrate, 3,3-dinitroazetidinium-3-nitro-1,2,4-triazol-5-onate, 1,3-bis(3',3'-dinitroazetidinyl)-2,2-dinitropropane, 1-(2',2',2'-trinitroethyl)-3,3-dinitroazetidine, 3,3-dinitroazetidinium perchlorate (9), 1-(3',3'-dinitroazetidinyl)-2,2-dinitropropane, 3,3-dinitroazetidinium-2,4,6-trinitrobenzoate, bis(3',3'-dinitroazetidine) ketone, 1-(2',4'-dinitrophenyl)-3,3-dinitroazetidine, 1-(2',4',6'-trinitrophenyl)-3,3-dinitroazetidine, bis(3',3'-dinitroazetidinyl) oxalone in static air has been studied by means of differential scanning calorimetry. Based on the results, the relative thermal stability order and two relationships between the kinetic parameters, and the exothermic decompn. temp. and thermal explosion crit. temp. for above-mentioned nitrosubstituted azetidines were proposed.

ACCESSION NUMBER: 2001:565328 CAPLUS
DOCUMENT NUMBER: 136:281561
TITLE: Thermal behavior of nitrosubstituted azetidines
AUTHOR(S): Zhang, Jiao-qiang; Hu, Rong-zu
CORPORATE SOURCE: Department of Chemical Engineering, Northwestern Polytechnical University, Xi'an, 710072, Peop. Rep. China
SOURCE: Hanneng Cailiao (2001), 9(2), 66-69
CODEN: HACAFQ; ISSN: 1006-9941
PUBLISHER: Hanneng Cailiao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 81 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Plane-wave ab initio calcns. based on d. function theory and the pseudopotential method were used to study the structural properties of cryst. ammonium dinitramide (ADN) under hydrostatic compression in the pressure range 0-300 GPa. Optimization of the crystal structure was done with full relaxation of at. positions and lattice parameters without any symmetry constraints. The calcns. were performed using periodic boundary conditions in all three directions. Changes in the electronic bands, charge distributions, and geometric parameters of the crystal were computed as functions of pressure. The ADN crystal maintains its monoclinic structure with P21/c symmetry for pressures up to 10 GPa, where there is a transition to a P.hivin.1 triclinic symmetry. The cryst. phase transition involves reorientation of the ammonium ions relative to the dinitramide ions as well as addnl. rotations of the NO2 groups relative to the N-N-N plane of dinitramide ions.

ACCESSION NUMBER: 2001:504609 CAPLUS
DOCUMENT NUMBER: 135:203225
TITLE: Quantum Mechanical Studies of Pressure Effects in Crystalline Ammonium Dinitramide
AUTHOR(S): Sorescu, Dan C.; Thompson, Donald L.
CORPORATE SOURCE: Department of Chemistry, Oklahoma State University, Stillwater, OK, 74078, USA
SOURCE: Journal of Physical Chemistry A (2001), 105(31), 7413-7422
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 82 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Liq. propellants, esp. for use in space travel, is comprised of a soln. of: (1) a dinitramide salt, of general formula X-D (D = O2N-NH-NO2 or the anion; A is the cations derived from NH3, amines, hydrazine, and methylated hydrazines) as the oxidizer; and (2) an org. fuel, selected from PhOH, PhCH2OH, C1-6-alcs., amines, carboxylic acids, amino acids, ketones, aldehydes, satd. liq. hydrocarbons, and C1-6-glycols and polyhydric alcs. These propellants are characterized by a low toxicity, no toxic or combustible vapors, high theor. specific impulse, high d., easy ignition, storageability at 10-50.degree., and low sensitivity (compared with conventional hydrazine fuels).

ACCESSION NUMBER: 2001:480582 CAPLUS
DOCUMENT NUMBER: 135:79058
TITLE: Liquid propellants for space travel containing nitrogen-containing dinitramide salts and a liquid organic fuel
INVENTOR(S): Anflo, Kjell; Wingborg, Niklas
PATENT ASSIGNEE(S): Svenska Rymdaktiebolaget, Swed.
SOURCE: U.S., 7 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6254705	B1	20010703	US 1999-258390	19990226

PRIORITY APPLN. INFO.: US 1999-258390 19990226
OTHER SOURCE(S): MARPAT 135:79058
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 83 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB This paper is a brief thermodn. calcn. of the thermochem. properties of monopropellants, composite propellants, and metalized solid composite propellants (binder, Al or Al/Mg and AP). The calcns. were performed for rocket equil. at 70 bar, considering an adiabatic through a nozzle in one-dimensional flow at chem. equil. and with an expansion ratio 70:1. The calcns. of flame temp., mol. wt. of combustion products, specific impulse and compn. of combustion products were performed for propellant formulations on the base binder (PBAN, epoxy resin, and DOA) with solid loading in the range 60-100% (AP, ADN, RDX, HMX, CL20, HNF, ONC, HNHAA, SORGUYL, HHTDD, HNHAW, TNAZ, Al, Al/Mg). As a propellant ingredient, ONC and HNHAA (based on their high d. and high pos. heat formation) can significantly enhance the performance of rocket propellants.

ACCESSION NUMBER: 2001:476838 CAPLUS
DOCUMENT NUMBER: 135:228900
TITLE: Thermochemical properties of composite propellants combustion products
AUTHOR(S): Florczak, Bogdan; Lipinska, Katarzyna
CORPORATE SOURCE: Institute of Industrial Organic Chemistry, Warsaw, 03-236, Pol.
SOURCE: New Trends in Research of Energetic Materials, Proceedings of the Seminar, 4th, Pardubice, Czech Republic, Apr. 11-12, 2001 (2001), 86-98. Editor(s): Zeman, Svatopluk. University of Pardubice: Pardubice, Czech Rep.
CODEN: 69BKIC
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 84 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A flowable solid propellant is prepd. by adding pellets of crosslinked hydrogel polymer to a liq. oxidizer in a mixing tank such that the oxidizer is absorbed into the pellets. Following formation of the flowable combustible pellets, the solid propellant flows into the combustion chamber. Suitable crosslinked hydrogel polymers include polyvinyl alc., polyacrylamide, hydroxyl group-functionalized cellulose (e.g., Me cellulose), polysaccharides, polyvinyl amines, polyvinyl ethers, polyethylene glycol, polypropylene glycol, and polytetrahydrofuran. Suitable liq. oxidizers are selected from hydrogen peroxide, hydroxylammonium nitrate, hydroxyl ammonium dinitramide, hydroxylammonium salts, nitrate salts (e.g., ammonium nitrate), dinitramides (e.g., ammonium dinitramide), nitroformates (e.g., hydroxylammonium nitroformate), and perchlorates.

ACCESSION NUMBER: 2001:435435 CAPLUS
DOCUMENT NUMBER: 135:48293
TITLE: flowable solid propellants consisting of crosslinked hydrogel polymer with absorbed liquid oxidizer
INVENTOR(S): Mahaffy, Kevin E.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001003294	A1	20010614	US 1998-197541	19981112
US 6361629	B2	20020326		

PRIORITY APPLN. INFO.: US 1998-197541 19981112

L4 ANSWER 85 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Relatively cool-burning nonazide-based gas generating compns. for inflation of a vehicle occupant protection device (e.g., airbags) consist of an org. fuel, phase-stabilized ammonium nitrate, optionally a sinter-forming material, and an ammonium halide coolant, in which a combustion product is produced consisting of the halide anion of the ammonium halide coolant and an alkali metal or alk. earth metal cation of the phase stabilizer. The phase stabilizer for ammonium nitrate include alkali metal and alk. earth metal nitrates, nitrites, peroxides, or dinitramides. The org. fuels are selected from cyanamides, tetrazoles, carbonamides, triazoles, guanidine (and guanidine salts), triazines, tetramethylammonium nitrate, tetrazines, urea, and urea salts.

ACCESSION NUMBER: 2001:352173 CAPLUS
DOCUMENT NUMBER: 134:342165
TITLE: Phase-stabilized ammonium nitrate-based cool-burning nonazide propellants for inflation of vehicle airbags
INVENTOR(S): Blomquist, Harold R.
PATENT ASSIGNEE(S): TRW Inc., USA
SOURCE: U.S., 5 pp., Cont.-in-part of U.S. 6,143,104.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6231702	B1	20010515	US 1998-92718	19980605
US 6143104	A	20001107	US 1998-26980	19980220
JP 11322482	A2	19991124	JP 1999-40167	19990218
JP 3157501	B2	20010416		
DE 19925442	A1	20000127	DE 1999-19925442	19990602

PRIORITY APPLN. INFO.: US 1998-26980 A2 19980220
US 1998-92718 A 19980605
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 86 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Gas-phase reactions of HONO with species of atm. interest, NO2, O3 and HCl, were investigated by means of ab initio mol.-orbital and transition-state theory calcns. For the HONO + NO2 reaction, the most favorable pathway is found to be the abstraction of OH in HONO by NO2, leading to the formation of HNO3 and NO products. The activation energies computed at the G2M (RCC,MP2) level of theory for the abstraction from trans- and cis-HONO are predicted to be 31.6 and 33.4 kcal/mol, resp. At 300 K, the calcd. rate const. is smaller than 1.2 .times. 10-14 cm3 mol-1 s-1. For the HONO + O3 reaction, the barrier height for the prodn. of HNO3 + O2 is predicted to be 15.0 kcal/mol with the rate const. at 300 K, 5.7 .times. 10-2 cm3 mol-1 s-1. For the trans- and cis-HONO + HCl .fwdarw. H2O + ClNO reactions, the G2M calcns. predict the corresponding barrier heights of 12.9 and 14.4 kcal/mol with predicted rate consts., 1.3 .times. 102 and 0.13 .times.102 cm3 mol-1 s-1 at 300 K. The results of theor. modeling indicate that the three gas-phase reactions are too slow to be significant under the stratospheric and tropospheric conditions.

ACCESSION NUMBER: 2001:341101 CAPLUS
DOCUMENT NUMBER: 135:94719
TITLE: HONO redox reactions relevant to the combustion of AP and ADN. (II). Reactions with NO2, O3 and HCl
AUTHOR(S): Lin, M. C.; Lu, Xin; Park, J.
CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
SOURCE: CPIA Publication (2000), 701(JANNAF 37th Combustion Subcommittee Meeting, 2000, Vol. 1), 273-283
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 87 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The redn. of HONO by HNO and NH3 was investigated by means of ab initio MO and transition-state-theory calcns. The main reaction channels for the HNO + trans-HONO (cis-HONO) reactions are those proceeding via 5-member ring transition states leading to the prodn. of NO and H2O. In the temp. range 300-1000 K, TST calcns. predict an A factor of 2.25 .times. 1010 cm3 mol-1 s-1 (or 3.63 .times. 1010 cm3 mol-1 s-1) and an apparent activation energy of 20.9 kcal/mol (or 21.9 kcal/mol) for the HNO + trans-HONO (or cis-HONO) reaction. In the NH3 + HONO system, the reaction NH3 + cis/trans-HONO .fwdarw. H2NNO + H2O with barrier heights centering around 34 kcal/mol, can occur at high temps. The reversible H-atom exchange reaction NH3 + cis-HONO H2NH-O(H)NONH2H + cis-HONO occurs readily. The calcd. rate const. for the reaction at 300 K is 1.06 .times. 106 cm3 mol-1 s-1, in reasonable agreement with the exptl. value of 2.2 .times. 106 cm3 mol-1 s-1.

ACCESSION NUMBER: 2001:341100 CAPLUS
DOCUMENT NUMBER: 135:94718
TITLE: HONO redox reactions relevant to the combustion of AP and ADN. (I). reactions with HNO and NH3
AUTHOR(S): Lin, M. C.; Lu, Xin; Musin, Ryza N.
CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
SOURCE: CPIA Publication (2000), 701(JANNAF 37th Combustion Subcommittee Meeting, 2000, Vol. 1), 261-271
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 88 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A numerical anal. was developed to study the detailed phys. and chem. processes involved in ADN combustion. The anal. is based on the conservation equations of mass, species concn. and energy for both condensed and gas phases, and takes into account finite-rate chem. kinetics and real thermophys. properties. A chem. kinetics scheme, contg. totally 33 species and 180 or more reactions, was established and employed to investigate the gas-phase flame structure. The anal. was applied to ADN self-deflagration at 6 atm with the inlet condition modified from measurement to maintain at. balance. Results show better agreement with exptl. data than the previous results reported last year. The predicted final-product compn. is consistent with chem. equil. A global decompn. reaction is proposed and employed in the condensed-phase model to obtain the inlet condition necessary to model the gas-phase flame. However, the resulting condensed-phase soln. is not consistent with the gas-phase flame because the interfacial energy balance condition is not satisfied. Further investigation into the initial decompn. of ADN in both condensed and gas phases are suggested.

ACCESSION NUMBER: 2001:339764 CAPLUS
DOCUMENT NUMBER: 135:63379
TITLE: An improved model of ammonium dinitramide (ADN) combustion with detailed chemistry
AUTHOR(S): Liau, Y. -C.; Yang, V.
CORPORATE SOURCE: Post-Doctoral Researcher, Chemical Science and Technology Division, Los Almos National Laboratory, Los Alamos, NM, 87545, USA
SOURCE: CPIA Publication (1999), 691(JANNAF 36th Combustion Subcommittee Meeting, 1999, Vol. 1), 369-377
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 89 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal reaction of NH3 with NOx (x = 1,2) has been investigated by the pyrolysis/FTIR spectrometric technique in the temp. range 575-710 K. The measured kinetic data for the disappearance of the reactants and the formation of products were modeled with a detailed mechanism for the H/N/O-system recently established for the AN/ADN decompn. reactions. Agreement between the kinetically modeled concns. and the exptl. measured values is quite satisfactory for both the reactants (NH3 and NOx) and the products (NO and N2O). Sensitivity analyses show that the reaction of NOx with NH3 is most sensitive to the NH2 + NOx reactions, with a slightly lower sensitivity to subsequent reactions involving HONO.

ACCESSION NUMBER: 2001:339730 CAPLUS
DOCUMENT NUMBER: 135:48284
TITLE: Kinetic modeling of the thermal reaction of NO2 with NH3
AUTHOR(S): Lin, M. C.; Park, J.; Cates, Sonya
CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
SOURCE: CPIA Publication (1999), 691(JANNAF 36th Combustion Subcommittee Meeting, 1999, Vol. 2), 305-316
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 60 THERE ARE 60 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 90 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review with 68 refs. of characteristics and mechanisms of thermal decompn. and combustion of ammonium dinitramide (ADN). The basic process and products of ADN thermal decompn. and its thermal stability were introduced. Based on the results of many exptl. and theor. studies, the mechanisms of ADN thermal decompn. were established as a function of temp. and pressure. The burning rate and combustion-wave structures of ADN depend strongly on pressure. The mechanisms of ADN combustion are characterized as the condensed-phase decompn. paths, the near-surface heat resistance zone and the moderate temp. plateau. The path of ADN-AN + N2O is considered to be crucial reaction in the thermal decompn. and combustion of ADN.

ACCESSION NUMBER: 2001:339727 CAPLUS
DOCUMENT NUMBER: 135:48274
TITLE: Thermal decomposition and combustion of ammonium dinitramide: A review
AUTHOR(S): Yang, Rongjie; Yang, Vigor
CORPORATE SOURCE: Department of Mechanical Engineering, Pennsylvania State University, University Park, PA, 16802, USA
SOURCE: CPIA Publication (1999), 691(JANNAF 36th Combustion Subcommittee Meeting, 1999, Vol. 2), 255-283
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
REFERENCE COUNT: 65 THERE ARE 65 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 91 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Demilitarization of aged Russian motors offer some unique safety challenges. Although motor designs and propellant formulations are similar to US systems, some formulation ingredients may cause increased sensitivity and reactivity that can be enhanced by aging and environmental conditions. Some propellant and motor characteristics may be out of the range of experience, requiring addnl. prepn. and training. Motor case design and propellant formulations must be considered susceptible to dielec. breakdown electrostatic discharge (ESD) ignition during handling unless it can be demonstrated otherwise. Motor handling and grounding protocol developed as a result of European and US incident investigations should be applied in all operations to mitigate potential incidents. An aggressive safety program including a formal system safety hazards anal. effort, must be in place throughout the concept, design, and operations phases of the program. Incidents can result in injury or death, shut down programs, result in considerable financial loss, generate mistrust, and jeopardize future demilitarization programs of benefit to both foreign and US interests.

ACCESSION NUMBER: 2001:327922 CAPLUS
DOCUMENT NUMBER: 135:23768
TITLE: Russian solid rocket motor demilitarization safety issues
AUTHOR(S): Brower, D. V.; Losee, L. A.
CORPORATE SOURCE: Astro Technology Inc., Houston, TX, USA
SOURCE: CPIA Publication (1999), 696(49th JANNAF Propulsion Meeting, 1999, Vol. 1), 131-145
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 92 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Poly(glycidyl nitrate), useful in making explosive compds., pyrotechnics and solid propellants, is prepd. by nitrating glycerol with .gtoreq.1 nitrating source (e.g., nitric acid) to form a nitrated glycerol soln. comprising dinitroglycerin and nitroglycerin; treating the nitrated glycerol soln. with .gtoreq.1 cyclizing agent (e.g., sodium hydroxide) to convert the dinitroglycerin into glycidyl nitrate; and polymg. the glycidyl nitrate, wherein the nitroglycerin is not distd. or other vaporized to remove from the nitrated glycerol soln. or the reaction soln. prior to the polymn. of the glycidyl nitrate, and is carried along with the dinitroglycerin during polymn. The glycidyl nitrate is not exposed to elevated temps. sufficient to cause accidental explosion or deflagration of the nitrate ester, and preferably, is not heatedabove room temp. at any time prior to polymn.

ACCESSION NUMBER: 2001:300784 CAPLUS
DOCUMENT NUMBER: 134:311888
TITLE: Preparation of poly(glycidyl nitrate) from high-purity glycidyl nitrate obtained from glycerol
INVENTOR(S): Highsmith, Thomas K.; Sanderson, Andrew J.; Cannizzo, Louis F.; Hajik, Robert M.
PATENT ASSIGNEE(S): Cordant Technologies Inc., USA
SOURCE: PCT Int. Appl., 23 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001029111	A1	20010426	WO 2000-US28611	20001016
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1240234	A1	20020918	EP 2000-972207	20001016
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
US 6362311	B1	20020326	US 2000-688819	20001017

PRIORITY APPLN. INFO.: US 1999-160207P P 19991019
WO 2000-US28611 W 20001016
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 93 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Mono- or di-addn. salts of (2-hydroxyethyl)hydrazine (HOCH2CH2NH2NH2)+(X)- or (HOCH2CH2NH2NH3)2+(X)2- [X = NO3, ClO4, N(NO2)2, C(NO2)3], which are more energetic than hydrazine and demonstrate reduced vapor pressure and lower toxicity, are prepd. by the salification of (2-hydroxyethyl)hydrazine with a stoichiometrically appropriate amt. of the corresponding acids in a polar solvent (e.g., methanol). Thus, (2-hydroxyethyl)hydrazine was salified with nitric acid in methanol to produce (2-hydroxyethyl)hydrazinium nitrate in 97.4% yield.

ACCESSION NUMBER: 2001:279577 CAPLUS
DOCUMENT NUMBER: 134:282924
TITLE: Preparation of energetic (2-hydroxyethyl)hydrazinium salts as low-toxicity propellants and explosives
INVENTOR(S): Brand, Adam J.; Drake, Gregory W.
PATENT ASSIGNEE(S): United States Dept. of the Air Force, USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6218577	B1	20010417	US 1999-356227	19990716

PRIORITY APPLN. INFO.: US 1998-93733P P 19980720
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 94 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The kinetics of accumulation of the main products of thermal decompn. of ammonium dinitramide in the melt was investigated. The isotope compn. of nitrogen-contg. gases evolved by the decompn. of 15NH4N(NO2)2 and NH415N(NO2)2 was found. Easily oxidized salts, amines, amides, iodides, and other compds. sol. in the melt interfere with the liq.-phase decompn. of ammonium dinitramide.

ACCESSION NUMBER: 2001:252469 CAPLUS
DOCUMENT NUMBER: 134:328632
TITLE: Stabilization of ammonium dinitramide in the liquid phase
AUTHOR(S): Andreev, A. B.; Anikin, O. V.; Ivanov, A. P.; Krylov, V. K.; Pak, Z. P.
CORPORATE SOURCE: Double Technology Federal Center "Soyuz", Dzerzhinskii, 140056, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (2000), 49(12), 1974-1976
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 95 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The structure of K dinitramide (KDN), KN3O4, was refined in the temp. range 85-298 K from single-crystal x-ray diffraction data in monoclinic space group P21/n. The unit-cell axial lengths and the cell vol. decrease linearly on cooling with the b axis being the most sensitive to the change of temp. The .beta. cell angle increases with decreasing temp. The thermal expansion of KDN is significantly anisotropic, expanding along the b axis [010] more than three times the amt. parallel to any other crystallog. direction. Other eigenvectors of the thermal expansion tensor lie approx. parallel to the diagonals of the ac plane. A rigid-body anal. of the dinitramide ion using the TLS formalism was performed and shows that the thermal motion of the anion is well represented by the rigid-body model. The eigenvalues of the libration tensor show significant anisotropy, whereas the translation tensor is close to isotropic. The variation of all descriptions of the thermal motion with respect to temp. indicates an anharmonic contribution to the mean field potential. The direction of greatest unit-cell expansion coincides with the largest components of the displacement tensor of the K ions and the direction of the largest at. amplitudes due to the libration of the dinitramide anions.

ACCESSION NUMBER: 2001:214206 CAPLUS
DOCUMENT NUMBER: 135:27047
TITLE: Anisotropic thermal expansion of potassium dinitramide: a variable-temperature crystallographic study
AUTHOR(S): Hardie, Michaele J.; Martin, Anthony; Pinkerton, A. Alan; Zhurova, Elizabeth A.
CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo, OH, 43606, USA
SOURCE: Acta Crystallographica, Section B: Structural Science (2001), B57(2), 113-118
CODEN: ASBSDK; ISSN: 0108-7681
PUBLISHER: Munksgaard International Publishers Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 96 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Thermal decompn. characteristics, stability, and degrdn. processes of ammonium dinitramide (ADN) were investigated by DSC and TG. Its kinetic parameters of the decompn. were measured. In addn., the binary eutectic system of ADN with ammonium nitrate (AN), the influence of AN on decompn. processes of ADN, and relation of thermal decompn. characteristics with combustion behavior were examd.

ACCESSION NUMBER: 2001:115880 CAPLUS
DOCUMENT NUMBER: 134:254348
TITLE: Thermal behavior of a new energetic material - ammonium dinitramide
AUTHOR(S): Ziru, Liu; Yang, Luo; Cuimei, Yin; Fengqi, Zhao; Yanghui, Kong; Yaping, Qin; Pei, Zhang
CORPORATE SOURCE: Xian Modern Chemistry Research Institute, 710065, Peop. Rep. China
SOURCE: Proceedings of the International Pyrotechnics Seminar (1999), 26th, 326-333
CODEN: PPYSD7; ISSN: 0270-1898
PUBLISHER: IIT Research Institute
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 97 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Nondetonable or low-detonation-sensitivity, substantially non-toxic liq. monopropellants, useful as impulse propellants (e.g., for spacecraft thrusters) or gas generating compns., are formed from aq. solns. of solid oxidizers in liq. oxidizers and water-sol. liq. fuels and have a f.p. of <-10.degree.. Preferred solid oxidizers are water sol. nitrates including ammonium dinitramide, aminoguanidine dinitrate, ammonium nitrate, hydroxylamine nitrate, hydrazine nitrate, guanidine nitrate and aminoguanidine nitrate. Preferred liq. fuels are water sol. alcs., amines and amine nitrates, hydroxyethyl hydrazine, hydroxyethylhydrazine nitrate, cyanoguanidine, guanidine, aminoguanidine, traminoguanidine, and their nitrate salts, ethanolamine dinitrate, ethylenediamine dinitrate, polyvinyl nitrate, and aziridine.

ACCESSION NUMBER: 2001:101080 CAPLUS
DOCUMENT NUMBER: 134:149671
TITLE: Nondetonable insensitive liquid monopropellant-based solutions and mixtures for use in spacecraft thrusters and gas generators
INVENTOR(S): Martin, James D.; Lundstrom, Norman H.; Scheffee, Robert S.
PATENT ASSIGNEE(S): Atlantic Research Corporation, USA
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001009063	A2	20010208	WO 2000-US20065	20000724

W: CA, JP, KR, MX
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRIORITY APPLN. INFO.: US 1999-363013 A 19990729

L4 ANSWER 98 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Nitrations of org. compds., for synthesis of energetic materials, is carried out by: (1) providing a CO2 reaction medium at .gtoreq.-30.degree. and .gtoreq.500 psi (corresponding to liq. or supercrit. CO2), and (2) prepg. N2O5 as the nitrating agent (e.g., by dehydration of anhyd. HNO3 with P2O5). A no. of nitrations in liq. or supercrit. CO2 were carried out by N2O5 or anhyd. HNO3, esp. for synthesis of 3-nitratomethyl-3-methyloxetane, poly(3-nitratomethyl-3-methyloxetane), glycidyl nitrate, .gamma.-cyclodextrin nitrate, and nitramines (esp. HMX).

ACCESSION NUMBER: 2001:58558 CAPLUS
DOCUMENT NUMBER: 134:118045
TITLE: Nitration of organic compounds in liquid and supercritical carbon dioxide for synthesis of energetic materials
INVENTOR(S): Nauflett, George W.; Farncomb, Robert E.
PATENT ASSIGNEE(S): United States Dept. of the Navy, USA
SOURCE: U.S., 10 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6177033	B1	20010123	US 1999-334555	19990621

PRIORITY APPLN. INFO.: US 1999-137233P P 19990601
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 99 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The prepn. for the isotopically substituted dinitramide salts has been proposed. The 14N and 15N NMR spectra of the 15N-enriched dinitramide anion in soln. are measured and interpreted for the first time. New exptl. IR and Raman spectra are obtained for the NH4+ and K+ salts of dinitramide in the solid state and in soln. The assignments are made with the help of quantum-mech. force field calcns. and normal-coordinate anal. The harmonic vibrational spectrum of the dinitramide anion calcd. at the B3LYP/6-31+G(d) level in the presence of solvent correlates best with the exptl. data. The structure and spectra of the M+CH(NO2)2- and M+N(NO2)2- (M denotes a counterion) are compared and discussed. Topol. of the electron charge d. in the dinitramide anion is analyzed within the framework of Bader's theory of atoms in mols.

ACCESSION NUMBER: 2001:47502 CAPLUS
DOCUMENT NUMBER: 134:316382
TITLE: On the structure and spectra of dinitramide salts
AUTHOR(S): Shlyapochnikov, V. A.; Tafipolsky, M. A.; Tokmakov, I. V.; Baskir, E. S.; Anikin, O. V.; Strelenko, Y. A.; Luk'yanov, O. A.; Tartakovsky, V. A.
CORPORATE SOURCE: N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, 117913, Russia
SOURCE: Journal of Molecular Structure (2001), 559(1-3), 147-166
CODEN: JMOSB4; ISSN: 0022-2860
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 100 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Rocket motor propellants contain a hydroxy-terminated caprolactone ether polymer binder [as a linear block copolymer of .epsilon.-caprolactone and poly(tetramethylene ether), with mol. wt. 2000-4200] 4-10, an oxidizer 45-75, a metal fuel (e.g., Al or B) 15-24, and a plasticizer 5-12 wt.%. Suitable oxidizers are ammonium nitrate, ammonium dinitramide, RDX, and HMX; plasticizers can be energetic or nonenergetic, such as BuNENA, trimethylolethane trinitrate, triethylene glycol dinitrate, dioctyl adipate, or isodecyl pelargonate. Disposal of this solid propellant consists of: (1) contacting the propellant with a soln. to hydrolyze the caprolactone-based binder, yielding caprolactone and poly(tetramethylene ether), (2) removing the remaining solids in the soln. after the binder hydrolyzes. The hydrolysis step can be carried out by conversion in a 12 N NaOH or 6 N HCl soln. at .apprx.60.degree. for .apprx.24 h.

ACCESSION NUMBER: 2001:45957 CAPLUS
DOCUMENT NUMBER: 134:102907
TITLE: Hydrolyzable rocket propellants containing caprolactone-polyether binders, oxidizers, and energetic plasticizers
INVENTOR(S): Jones, Marvin Luther; Tzeng, Donald Dongjaw
PATENT ASSIGNEE(S): United Technologies Corp., USA
SOURCE: Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1069095	A1	20010117	EP 2000-305886	20000712

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

US 6238499	B1	20010529	US 1999-356175	19990716
JP 2001064091	A2	20010313	JP 2000-213748	20000714
US 2002029829	A1	20020314	US 2000-730684	20001206

PRIORITY APPLN. INFO.: US 1999-356175 A 19990716
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 101 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The energetic material, ammonium dinitramide, NH4N(NO2)2, is investigated with regard to its thermal decompn. behavior by using the GC/MS technol. Thermal decompn. of ADN is obsd. at 120.degree.. The main pathway is based on the formation of NH4NO3 and N2O, and the thermal decompn., of NH4NO3 to N2O and H2O at higher temps. Side reactions form NO2, NO, N2 and O2.

ACCESSION NUMBER: 2001:45392 CAPLUS
DOCUMENT NUMBER: 134:133769
TITLE: Research of ammonium dinitramide decomposition (ADN)
AUTHOR(S): Xu, Rong; Nie, Fu-de; Liu, Chun; Jang, Kai
CORPORATE SOURCE: Institute of Chemical Materials, CAEP, Mianyang, 621900, Peop. Rep. China
SOURCE: Hanneng Cailiao (2000), 8(4), 175-177
CODEN: HACAFQ; ISSN: 1006-9941
PUBLISHER: Hanneng Cailiao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 102 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Photolytic rate consts. for the energetic compd. ammonium dinitramide (ADN) were detd. in order to understand the fate of ADN in natural bodies of water. Quantum yields were measured at 290-400 nm using a lamp system, and these values were combined with absorption of light in a water column to model photolysis rates as a function of depth. The validity of this model was tested in field trials in Onondaga Lake, Syracuse, New York. For a summertime irradn., half-lives ranged from .apprx.6 min at the surface to .apprx.15 yr at a depth of 2 m. The predicted and obsd. degrdn. rates of ADN were sufficiently similar to justify use of this simple model. The degrdn. of ADN was not enhanced to any measurable degree by sensitized photoreactions in humic solns. Thus, the photodegrdn. of ADN can be predicted throughout the water column of a body of water.

ACCESSION NUMBER: 2001:30379 CAPLUS
DOCUMENT NUMBER: 134:120393
TITLE: Modeling the photolysis of ammonium dinitramide in natural waters
AUTHOR(S): Beretvas, Michelle K.; Hassett, John P.; Burns, Susan E.; Basford, Trisha M.
CORPORATE SOURCE: Department of Chemistry, College of Environmental Science and Forestry, State University of New York, Syracuse, NY, 13210-2726, USA
SOURCE: Environmental Toxicology and Chemistry (2000), 19(11), 2661-2665
CODEN: ETOCDK; ISSN: 0730-7268
PUBLISHER: SETAC Press
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 103 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The chem. stability is studied of ammonium dinitramide (solid rocket fuel) to moisture, oxygen, metals of variable valences, and ammonium salts. The main impurities (ammonium nitrate, ammonium sulfate, and ammonium chloride) are considered. The effects of additives (acids, ammonium salts, metal oxides, and acetylacetonates) on the stability of the ammonium dinitramide, rate of dissoln. of the ammonium dinitramide solns., effects of additives of the thermal stability of the ammonium dinitramide at 80.degree. are detd.

ACCESSION NUMBER: 2001:19883 CAPLUS
DOCUMENT NUMBER: 134:73652
TITLE: Chemical stability of ammonium dinitramide (ADN)
AUTHOR(S): Pak, Z. P.; Andreev, A. B.; Ivanov, A. P.; Krylov, V. K.
CORPORATE SOURCE: Fed. Tsentr Dvoinykh Tekhnol., Dzerzhinsk, Russia
SOURCE: Doklady Akademii Nauk (2000), 375(3), 358-361
CODEN: DAKNEQ; ISSN: 0869-5652
PUBLISHER: MAIK Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 104 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal stabilities of 3-6-dihydrazido-1,2,4,5-tetrazine (Hz2Tz) and its salts with diperchlorate [Hz2Tz (HClO4)2], dinitrate [Hz2Tz (HNO3)2], bisdintramidate [Hz2Tz (HDN)2] [where HDN is HN(NO2)2] and bisdinitroimidazolate [Hz2Tz Bim] have been examd. and compared to other 3,6-disubstituted tetrazines. The neutral tetrazines exhibited two principal modes of decompn.: elimination of N2 from the tetrazine ring followed by cleavage of the remaining N-N bond; and loss of the substituent group, in some cases assisted by proton transfer. The salts Hz2TzX2 undergo reversible equil. with the parent Hz2Tz and HX; thus, in several cases the decompn. rate of the parent tetrazine and the salt are essentially identical.

ACCESSION NUMBER: 2000:902180 CAPLUS
DOCUMENT NUMBER: 134:88425
TITLE: Thermal decomposition of high-nitrogen energetic compounds-tetrazines
AUTHOR(S): Oxley, Jimmie C.; Smith, James L.; Zhang, Jun; Chen, Heng
CORPORATE SOURCE: Chemistry Department, University of Rhode Island, USA
SOURCE: Proceedings of the NATAS Annual Conference on Thermal Analysis and Applications (2000), 28th, 287-293
CODEN: PNACCS
PUBLISHER: NATAS
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 105 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review with 46 refs. The methods of prepn. and properties of dinitroamine HN(NO2)2 and its salts were described. Many simple or complex salts of DNA can be considered as oxidizing components in the compns. of energetic materials. From DNA structure it would be possible to prep. ionic as well as covalent org. compds. with -N(NO2)2 group. These compds. can be energetic materials alone as well as salts of DNA with org. cations and complexes with org. ligands. High degree of interest in the synthesis and properties of DNA, its salts and new compds. with -N(NO2)2 group was recently obsd. in literature. Main factors which accelerate studies on the synthesis and properties of DNA derivs. are their potential applicability. DNA is a strong acid, its anion possesses ambident structure: -N(NO2)2 .dblarw. O2N-N = NO-O therefore, two types of salts can be formed. Similarly, alkylation of DNA leads to N- or O-alkyl derivs. Mercury dinitramide Hg(N3O4)2 was extremely interesting. It is a covalent compd. (O-salt) in a solid state as well as in the soln. in nonpolar solvents. In polar solvents it dissocs. forming Hg(II) cation and N3O4 anion. Hg(N3O4)2 can be useful reagent in org. synthesis similarly to other inorg. derivs. of Hg.

ACCESSION NUMBER: 2000:858778 CAPLUS
DOCUMENT NUMBER: 134:216330
TITLE: Dinitroamine (DNA). Compounds with -N(NO2)2 group as potential components of energetic materials
AUTHOR(S): Syczewski, Michal; Cieslowska-Glinska, Iwona
CORPORATE SOURCE: Zakl. Materialow Wysokoenergetycznych, Wydz. Chem., Politech. Warszawska, Warsaw, 00-664, Pol.
SOURCE: Wiadomosci Chemiczne (2000), 54(5-6), 473-497
CODEN: WICHAP; ISSN: 0043-5104
PUBLISHER: Wydawnictwo Uniwersytetu Wroclawskiego
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Polish

L4 ANSWER 106 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Hybrid gas-generating materials for gas-actuated safety devices (esp. vehicle occupant airbags) consists of 5-95 wt.% guanyl urea dinitramide, 5-50 wt.% of an oxidant (based on total amt. of solids), and, if necessary, 0-90 wt.% guanidine dinitramide, <10 wt.% of finely divided boron, and <10 wt.% binder. Oxidizers are typically selected from (1) alkali metal nitrates, perchlorates, and permanganates, (2) manganese-group metal oxides (e.g., oxides of Fe, Ni, and Co), and (3) Groups 7-12 transition metal oxides. These compns. are characterized by low pollutant emissions, low smoke formation, and adjustable burning rate.

ACCESSION NUMBER: 2000:824198 CAPLUS
DOCUMENT NUMBER: 134:6642
TITLE: Guanyl urea dinitramide-based solid propellants with adjustable burning rate for vehicle airbag inflation
INVENTOR(S): Persson, Svante; Sjoqvist, Conny
PATENT ASSIGNEE(S): Bofors Bepab AB, Swed.
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000069792	A1	20001123	WO 2000-SE864	20000504
W: JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
SE 9901726	A	20001113	SE 1999-1726	19990512
SE 514336	C2	20010212		
EP 1194392	A1	20020410	EP 2000-930020	20000504
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRIORITY APPLN. INFO.: SE 1999-1726 A 19990512
WO 2000-SE864 W 20000504
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 107 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Particles of moisture-sensitive propellants and explosives, as well as oxidants (esp. ammonium dinitramide and/or ammonium nitrate), are microencapsulated in a two-step process consisting of: (1) coating the particles , under exclusion of moisture, with a wax-like material, and (2) coating and microencapsulation of the wax-coated particle with an aq. soln. of an amino resin prepolymer, which is then polymd. The wax-like material is typically a paraffin wax or a polyethylene glycol wax. The amino resins are typically aminoplasts, such as melamine-formaldehyde, urea-formaldehyde, and formaldehyde-melamine-urea prepolymers.

ACCESSION NUMBER: 2000:822564 CAPLUS
DOCUMENT NUMBER: 134:6640
TITLE: Procedure for microencapsulating particles from driving and explosives and in this procedure manufactured particle
INVENTOR(S): Teipel, Ulrich; Heintz, Thomas
PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung eV, Germany
SOURCE: Ger. Offen., 6 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19923202	A1	20001123	DE 1999-19923202	19990520

PRIORITY APPLN. INFO.: DE 1999-19923202 19990520
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 108 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Prills of ammonium dinitramide are prepd. by melting the salt with a stabilizer and, by a dry nitrogen pressure, injecting the molten salt into an inert, perfluorinated carrier liq. of a greater d. which, initially, is above the solidification temp. of the salt. The molten salt and carrier liq. pass together in turbulent flow through a heated conduit in which stationary vanes disperse the salt into droplets. The liq. and salt then pass in a turbulent flow through a cooled conduit for solidification of the salt into prills without agglomeration. The prills are then sepd. from the liq. by flotation and any liq. carried with the prills recycled. The main flow of carrier liq. is pumped through a preheater and then back to the molten salt injector. The cooled conduit is provided with compression refrigeration, the refrigerant passing in parallel flow along the conduit and the compressed refrigerant passing to the preheater before condensation.

ACCESSION NUMBER: 2000:754370 CAPLUS
DOCUMENT NUMBER: 133:323665
TITLE: Apparatus for prilling an oxidizing salt of ammonia
INVENTOR(S): Wood, Stanley E.; Weinhardt, Robert A.
PATENT ASSIGNEE(S): United States Dept. of the Navy, USA
SOURCE: U.S., 7 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6135746	A	20001024	US 1998-137864	19980807

PRIORITY APPLN. INFO.: US 1998-137864 19980807
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 109 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The efficiency of the development of energetic materials can be increased by modeling the stability, compatibility, ageing and thermal decompn. of the used components and formulations. All four terms have in common that chem. reactions are the dominating processes, besides for example migration of mobile components. These chem. reactions are only in part controlled by thermodn., to a great extend they are controlled kinetically. Kinetic models are formulated and used for mass loss measurements with isothermal ovens and with TGA (thermo gravimetric anal.) and isothermal and adiabatic heat generation rate for decompn. and bimol. reaction. Advantages and disadvantages of these methods in assessing the stability, the ageing and the thermal decompn. are discussed. The models on mass loss and heat generation rate include autocatalytic decompn. and evapn. of volatile ingredients. Approxns. and simplifications of the autocatalytic models are discussed. The application of models to describe the thermal decompn. and the ageing of substances include ADN, CL20, GAP, and energetic plasticizers as Me/Et-NENA, EGBAA (A17), GAPA, DANPE. The kinetic data for their decompn. are given.

ACCESSION NUMBER: 2000:714051 CAPLUS
DOCUMENT NUMBER: 133:298429
TITLE: Modelling of the stability, ageing and thermal decomposition of energetic components and formulations using mass loss and heat generation
AUTHOR(S): Bohn, Manfred A.
CORPORATE SOURCE: Fraunhofer-Institute fur Chemische Technologie (ICT), Pfinztal-Berghausen, D-76318, Germany
SOURCE: Proceedings of the International Pyrotechnics Seminar (2000), 27th, 751-770
CODEN: PPYSD7; ISSN: 0270-1898
PUBLISHER: IIT Research Institute
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 110 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Unavailable

ACCESSION NUMBER: 2000:695519 CAPLUS
DOCUMENT NUMBER: 134:200355
TITLE: The low-temperature photochemistry of biguanidinium dinitramide single crystals: An EPR investigation
AUTHOR(S): Weinschenk, Matthew Francis
CORPORATE SOURCE: Yale Univ., USA
SOURCE: (1999) 508 pp. Avail.: UMI, Order No. DA9954399
From: Diss. Abstr. Int., B 2000, 61(1), 276-277
DOCUMENT TYPE: Dissertation
LANGUAGE: English

L4 ANSWER 111 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Title only translated.

ACCESSION NUMBER: 2000:692731 CAPLUS
DOCUMENT NUMBER: 133:254586
TITLE: Composition for fire extinguishing
INVENTOR(S): Pak, Z. P.; Shishov, N. I.; Perepechenko, B. P.; Dubonos, V. G.; Gordeev, V. I.
PATENT ASSIGNEE(S): Russia
SOURCE: Russ. From: Izobreteniya 1998, (6), 177.
CODEN: RUXXE7
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2105581	C1	19980227	RU 1995-105353	19950407

PRIORITY APPLN. INFO.: RU 1995-105353 19950407

L4 ANSWER 112 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Gas-generating compns. esp. for use in inflation of vehicle occupant protection devices (i.e., automobile airbags) consist of an oxidizer, a binder, and guanylurea dinitramide fuel. Preferred compns. are guanylurea dinitramide 40-90, oxidizer 10-60, and binder 0-10 wt.%. The oxidizers are selected from ammonium nitrate, potassium nitrate, potassium perchlorate, ammonium perchlorate, metal oxides, and metal complexes.

ACCESSION NUMBER: 2000:635193 CAPLUS
DOCUMENT NUMBER: 133:195583
TITLE: Guanylurea dinitramide-based gas-generating compositions for inflation of vehicle airbags
INVENTOR(S): Blomquist, Harold R.
PATENT ASSIGNEE(S): TRW Inc., USA
SOURCE: U.S., 9 pp., Cont.-in-part of U.S. Ser. No. 123,821.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6117255	A	20000912	US 1999-359248	19990722
US 6004410	A	19991221	US 1998-123821	19980728
DE 10034287	A1	20010222	DE 2000-10034287	20000714
DE 10034287	C2	20020711		

PRIORITY APPLN. INFO.: US 1998-123821 A2 19980728
US 1999-359248 A 19990722
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 113 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Cryst. energetic materials with improved stability and/or decreased sensitivity are prepd. by crystn. with stirring at 15-75.degree. in the presence of ultrasound with frequency 10-100 kHz and amplitudes of 0.4-10 .mu.. The energetic materials that can be prepd. in this manner are explosives and high-energy oxidizers, esp. hydrazinium nitroformate, CL-20, ADN, AP, RDX, HMX, and PETN.

ACCESSION NUMBER: 2000:626476 CAPLUS
DOCUMENT NUMBER: 133:195590
TITLE: Crystallization of explosives and high-energy oxidizers in presence of ultrasound
INVENTOR(S): Veltmans, Wilhelmina H. M.; Wierckx, Franciscus J. M.
PATENT ASSIGNEE(S): Aerospace Propulsion Products B.V., Neth.
SOURCE: Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1033357	A1	20000906	EP 1999-200592	19990302
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
NO 2000001017	A	20000904	NO 2000-1017	20000229

PRIORITY APPLN. INFO.: EP 1999-200592 A 19990302
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 114 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Stabilizers for ammonium dinitramide oxidant (i.e., in energetic formulations) consist of six-membered-ring arom.-contg. heterocyclic org. compds., which are present at a 0.001-5 (preferably 0.1-1) wt.% concn. The stabilizers are typically arom. nitrogen-contg. heterocyclic org. compds., esp. pyridines, pyrimidines, pyrazines, and triazines substituted with amino, hydroxy, or other activating groups. Preferred stabilizers are 7-(2,3-dihydroxypropyl)theophylline, 2,4,6-triaminopyrimidine, 2,2'-dipyridylamine, and riboflavin. The compns. can also include an indicator in which the disappearance of a blue-violet color signifies the loss of stabilizers with accelerated degrdn. of the ammonium dinitramide.

ACCESSION NUMBER: 2000:623656 CAPLUS
DOCUMENT NUMBER: 133:179919
TITLE: Nitrogen-contg. heterocyclic compounds as potential stabilizers for ammonium dinitramide (ADN) oxidant in energetic formulations
INVENTOR(S): Ciaramitaro, David A.; Reed, Russell
PATENT ASSIGNEE(S): United States Dept. of the Navy, USA
SOURCE: U.S., 12 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6113712	A	20000905	US 1998-226616	19981222

PRIORITY APPLN. INFO.: US 1998-226616 19981222
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 115 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Liq. monopropellants intended to substitute for hydrazine-based liq. propellants, consist of a soln. of a fuel, an optional solvent for the oxidizer or the fuel (which can be the fuel itself), and a dinitramide salt as the oxidizer. Suitable fuels include C1-6-alcs. (mono, di, tri, and polyols), amino acids, carboxylic acids, ketones, amines (primary, secondary, or tertiary), formamides, aldehydes, and satd. liq. hydrocarbons; preferred fuels are N-methylpyrrolidone, glycine, acetone, MeOH, EtOH, and glycerol. A preferred compn. is ammonium dinitramide 61, water 26, and glycerol 13 wt.%. The novel propellants are characterized by low toxicity, low flammability, high specific impulse, high-d., low-sensitivity, high ease of ignition, long-term stability in storage (at up to 50.degree.), and can be used for spacecraft propulsion.

ACCESSION NUMBER: 2000:608691 CAPLUS
DOCUMENT NUMBER: 133:195581
TITLE: High-energy low-sensitivity liquid monopropellants containing dinitramide salts as oxidizers
INVENTOR(S): Anflo, Kjell; Wingborg, Niklas
PATENT ASSIGNEE(S): Svenska Rymdaktiebolaget, Swed.
SOURCE: PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000050363	A1	20000831	WO 2000-SE358	20000223
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
SE 9900715	A	20000827	SE 1999-715	19990226
SE 513930	C2	20001127		
BR 2000008548	A	20011106	BR 2000-8548	20000223
EP 1192115	A1	20020403	EP 2000-913204	20000223
EP 1192115	B1	20030618		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002537218	T2	20021105	JP 2000-600948	20000223
AT 243177	E	20030715	AT 2000-913204	20000223
NO 2001004152	A	20010927	NO 2001-4152	20010827

PRIORITY APPLN. INFO.: SE 1999-715 A 19990226
WO 2000-SE358 W 20000223
OTHER SOURCE(S): MARPAT 133:195581
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 116 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Microencapsulation of particulate propellants and explosives leads to product improvements with respect to their further processing, stability, and their compatibility. In this work, chem. microencapsulation was proposed, in which liq.-phase sepn. of the wall material from the core material occurs. Suitable material pairs were: (1) ammonium dinitramide coated with Et cellulose, (2) ammonium dinitramide coated with cellulose esters, (3) CL-20 coated with cellulose esters, and (4) HMX coated with aminoplasts.

ACCESSION NUMBER: 2000:581230 CAPLUS
DOCUMENT NUMBER: 133:179874
TITLE: Coating of particulate energetic materials
AUTHOR(S): Heintz, T.; Teipel, U.
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal, D-76327, Germany
SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 120/1-120/12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: German
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 117 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In the last years ammonium dinitramide, (ADN) is a promising new oxydator and a possible substitute for ammonium nitrate (AN) and esp. for the chlorinated oxidizer ammonium perchlorate. Advantages of ADN are the higher energy input combined with a reduced pressure for decompg. For judging the purity of the synthesized and/or treated or aged pure or formulated ADN the estd. AN content was taken into account. AN is known as a byproduct of the ADN synthesis as well as a possible decompn. product of ADN. A suitable ion chromatog. method was developed for the direct anal. of DN anions. Different ion exchanger phases were tested with org. and/or inorg. eluents. The ionic strength and flow rate of the eluent was improved to get an acceptable resoln. for nitrite and nitrate combined with a short run time for the whole anal. Detection was realized by elec. cond. or UV absorption whereby the measurement wave lengths were optimized in order to get a small signal to noise ratio and simultaneously a suitable sensitivity esp. for NO2 and NO3. Under improved conditions (Ion Pac 11, 1 mL/min NaOH, 300 mmol) detection limits of 0,05-0,01 ppm were realized for NO3 and NO2, resp., measured at 214 nm. Linearity range for the anal. of DN (285 nm) was found to be very broad (.1toreq.700 ppm). All 3 anions can be analyzed in one run taking maximal 30 min.

ACCESSION NUMBER: 2000:581188 CAPLUS
DOCUMENT NUMBER: 133:179871
TITLE: Chromatographic determination of dinitramide anions in the presence of nitrate
AUTHOR(S): Bunte, G.; Neumann, H.; Krause, H.
CORPORATE SOURCE: H. Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal, D-76327, Germany
SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 92/1-92/10
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 118 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The results of exptl. investigations on impact sensitivity of binary oxidizer-fuel compns. as a functions of fuel caloricity and oxidizer chem. activity are presented. The sensitivities of all investigating compns. increase when caloricity of fuels increase. Max. of compn. sensitivities depends poorly on physicochem. nature of oxidizers.

ACCESSION NUMBER: 2000:581140 CAPLUS
DOCUMENT NUMBER: 133:298391
TITLE: The effect of fuel's caloricity on impact sensitiveness of binary oxidizer-fuel compositions
AUTHOR(S): Teselkin, V. A.; Dubovik, A. V.
CORPORATE SOURCE: Semenov Institute of Chemical Physics RAS, Moscow, 117977, Russia
SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 74/1-74/4
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 119 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Based on exptl. measurements and anal. literary data, the enthalpies of formation were calcd. for primary and secondary nitramines, esp. nitramine radicals, in order to obtain the bond dissocn. energies for C-H, C-C, C-N, N-H, and N-N. The contributions of the nitramine groups in the enthalpies of gas-phase formation and in the enthalpies of atomization were detd. Finally, the efficient energies of interaction of nitramine groups in polynitroamines are calcd.

ACCESSION NUMBER: 2000:581061 CAPLUS
DOCUMENT NUMBER: 133:283739
TITLE: The energies of bond dissociation and efficient interaction energies in nitroamines
AUTHOR(S): Kostikova, L. M.; Miroshnichenko, E. A.; Matyushin, Y. N.
CORPORATE SOURCE: Semenov Institute of Chemical Physics, Russian Academy of Sciences, Moscow, 117977, Russia
SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 50/1-50/11
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 120 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Salts of dinitramide [HN(NO2)2] were prepd. by reaction of dinitramide or ammonium dinitramide with amines, and evaluated with respect to thermal stability, susceptibility to hydrolysis, and sensitivity to mech. stimulus. Because some of the salts showed good or satisfactory thermal stability and low susceptibility to hydrolysis, they should have use as explosives or components of energetic mixts. The tetrakis(nitramide) of triethylenetetramine was stable to hydrolysis and had an explosive strength comparable to that of RDX. Ethylenediamine bis(dinitramide) showed similar properties. Some salts also have application in crosslinking or plasticizing composite explosives.

ACCESSION NUMBER: 2000:581018 CAPLUS
DOCUMENT NUMBER: 133:283737
TITLE: Synthesis and properties of salts of dinitroamide (DNA) with various amines
AUTHOR(S): Boniuk, Henryka; Cieslowska-Glinska, Iwona; Syczewski, Michal
CORPORATE SOURCE: Division of High-Energetic Materials, Faculty of Chemistry, Warsaw University of Technology (Politechnika), Warsaw, 00-664, Pol.
SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 39/1-39/9
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 121 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The biodegrdn. of one popular nitramine energetics, ammonium dinitramide (ADN) by mixt. of denitrifying bacterial species was investigated. ADN was obsd. to be effectively mineralized in the anaerobic mixed culture. The initial ADN concn. of 250 mg/L was reduced to non-detectable levels (> 99% removal efficiency) in 5 days of incubation under anaerobic conditions. Final products generated from anaerobic degrdn. of nitramine energetics by anaerobic metab. were NH4+, CH4, and CO2 that were released to the environment with the denitrifiers' growth. In addn., it was found that the activity of denitrifiers was inhibited by high concn. of ammonia generated through the degrdn. reactions of energetic nitrites.

ACCESSION NUMBER: 2000:579285 CAPLUS
DOCUMENT NUMBER: 133:167831
TITLE: Degradation of ammonium dinitramide (ADN) in digested sewage sludge under strict anaerobic conditions
AUTHOR(S): Kwon, Sung-Hyun
CORPORATE SOURCE: R & D Center for Environment, Safety & Health, LG Corp. Institute of Technology, Seoul, 120-749, S. Korea
SOURCE: Toxicological and Environmental Chemistry (2000), 75(1-2), 35-42
CODEN: TECSDY; ISSN: 0277-2248
PUBLISHER: Gordon & Breach Science Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 122 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The biodegrdn. of two popular nitramine energetics were investigated. The HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine) was mineralized by anaerobic mixed denitrifiers in digested sewage sludge culture. An initial HMX concn. of 120 mg/L decreased to a non-detectable level (> 99% removal efficiency) in 8 days of incubation under strict anaerobic conditions. It was, however, not effectively metabolized by single denitrifying species, P. aeruginosa, B. subtilis in a nitrogen limiting condition under their optimum growth conditions. The other nitramine energetic, ADN (ammonium dinitramide), was mineralized well in the anaerobic mixed culture. The initial ADN concn. of 250 mg/L was reduced to non-detectable levels (> 99% removal efficiency) in 5 days of incubation under anaerobic conditions. These results show that the anaerobic mixed culture, compared to the pure monoculture, is superior in the degrdn. of nitramine energetics.

ACCESSION NUMBER: 2000:579284 CAPLUS
DOCUMENT NUMBER: 133:167830
TITLE: Comparison of metabolic nitramine degradation by denitrifying species
AUTHOR(S): Kwon, Sung-Hyun
CORPORATE SOURCE: R & D Center for Environment Safety and Health, LG Corp. Institute of Technology, Seoul, 120-749, S. Korea
SOURCE: Toxicological and Environmental Chemistry (2000), 75(1-2), 25-34
CODEN: TECSDY; ISSN: 0277-2248
PUBLISHER: Gordon & Breach Science Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 123 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal decompn. mechanism and primary stage of potassium dinitramide (KDN) was investigated including kinetic parameters under conditions close to the combustion regime. The expts. were performed at a linear heating rate of 10.degree./min under several elevated pressure conditions. The decompn. of solid KDN is complex, depending on storing time, grain size, and refinement. The influence of pressure on the solid KDN decompn. is interpreted by the forming mechanism of N2O and KNO3. The decompn. characteristics of liq. KDN show a 2-stage profile and a distinct influence of pressure. The first-stage decompn. includes a N-N cleavage resulting in a biradical and NO2 with escape of the NO2. The second-stage decompn. produces a free radical [O] from the biradical, forming KNO3 from KNO2 and [O]. 10 Wt.% KDN in ammonium nitrate (AN) eliminates the disadvantageous crystal transition phase IV .fwdarw. phase III of AN. The transition results in an irreversible increase in the crystal vol. showing an increase in probity and a loss of mech. strength. Therefore, KDN is ideal as phase-stabilizer for AN.

ACCESSION NUMBER: 2000:567139 CAPLUS
DOCUMENT NUMBER: 134:6618
TITLE: Thermal decomposition of potassium dinitramide at elevated pressure
AUTHOR(S): Yin, Cuimei; Liu, Ziru; Kong, Yanghui; Zhao, Fengqi; Wang, Yuan; Lei, Ming; Luo, Yang; Zhang, Pei; Shao, Yinghui; Li, Shangwen
CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xi'an, Peop. Rep. China
SOURCE: Progress in Astronautics and Aeronautics (2000), 185(Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 425-437
CODEN: PAAEA9; ISSN: 0079-6050
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 124 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The probing mass spectrometry procedure is shown to be an indispensable method providing important information on solid rocket propellant chem. combustion mechanism, by the study of the flame structure of AP, RDX, HMX, and ADN, propellants based on these, and double-based propellants. Although it is limited to some extent by pressure, flame zone width, and other considerations, the results obtained with its aid have successfully been used to understand the chem. reaction mechanisms of the solid propellant combustion and develop combustion models. The further application of the method and other spectroscopic and thermocouple methods allow a refined and widened understanding of the solid propellant combustion mechanism.

ACCESSION NUMBER: 2000:567135 CAPLUS
DOCUMENT NUMBER: 133:254556
TITLE: Flame structure of solid propellants
AUTHOR(S): Korobeinichev, Oleg P.
CORPORATE SOURCE: Russian Academy of Sciences, Novosibirsk, Russia
SOURCE: Progress in Astronautics and Aeronautics (2000), 185(Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 335-354
CODEN: PAAEA9; ISSN: 0079-6050
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 125 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review, with 30 refs., of the discovery, synthesis, and characterization of dinitramidic acid (HN3O4 or nitronitramide) and dinitramide salts, with emphasis on first appearance in the literature, synthetic methods (typically by base-catalyzed cleavage), structure and properties (e.g., intramol. hydrogen bonding), chem. properties, and reactions.

ACCESSION NUMBER: 2000:567131 CAPLUS
DOCUMENT NUMBER: 133:254549
TITLE: Synthesis and characterization of dinitramidic acid and its salts
AUTHOR(S): Luk'yanov, Oleg A.; Tartakovsky, Vladimir A.
CORPORATE SOURCE: Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, Russia
SOURCE: Progress in Astronautics and Aeronautics (2000), 185(Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 207-220
CODEN: PAAEA9; ISSN: 0079-6050
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 126 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review, with 41 refs., of the development in solid propellant formulations, esp. in relation to development high-performance insensitive munitions and for redn. of pollutants. Topics discussed include a background and exptl. results for high performance, insensitivity, and pollution prevention; development of oxidizers and high-d. energetic components; hydrolyzable energetic and non-energetic binders; and energetic thermoplastic elastomers.

ACCESSION NUMBER: 2000:567130 CAPLUS
DOCUMENT NUMBER: 133:240246
TITLE: Advances in solid propellant formulations
AUTHOR(S): Chan, May L.; Reed, Russ Jr.; Ciaramitaro, David A.
CORPORATE SOURCE: Naval Air Warfare Center, China Lake, CA, 93555, USA
SOURCE: Progress in Astronautics and Aeronautics (2000), 185(Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 185-206
CODEN: PAAEA9; ISSN: 0079-6050
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 127 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Recent theor. and exptl. studies were examd. for reactions of [C,H,N,O] systems related to the combustion of nitramines, esp. ammonium dinitramide, RDX, and HMX, with emphasis on kinetics and mechanisms for barrier-less radical-radical assocn. processes and subsequent reactions of excited assocn. products. Most theor. results related to the RDX-HNX system are based on G2M (modified Gaussian-2) potential energy profiles. A canonical variational RRKM approach was also used in conjunction with the G2M potential energy profiles, also in combination with mol. parameters predicted by the hybrid d. functional method, in order to obtain kinetic rate consts. for exothermic radical-radical reactions that have not been easily measured exptl. Several overall rate consts. and product branching ratios were accurately predicted.

ACCESSION NUMBER: 2000:567125 CAPLUS
DOCUMENT NUMBER: 133:254582
TITLE: Gas-phase chemical kinetics of [C, H, N, O] systems relevant to combustion of nitramines
AUTHOR(S): Chakraborty, D.; Lin, M. C.
CORPORATE SOURCE: Emory University, Atlanta, GA, USA
SOURCE: Progress in Astronautics and Aeronautics (2000), 185(Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 33-71
CODEN: PAAEA9; ISSN: 0079-6050
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 107 THERE ARE 107 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 128 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Prodn. of ADN prills includes (1) melting and dispersion of ADN in an apolar medium to obtain ADN drops, (2) cooling of the medium for solidification of the drops to form the prills, and (3) sepn. of the prills from the medium. The resulting ADN prills are suitable as an oxidn. agent which is compatible for blending with polymer systems.

ACCESSION NUMBER: 2000:531855 CAPLUS
DOCUMENT NUMBER: 133:106981
TITLE: Production of ammonium dinitramide (ADN) prills suitable for use in polymer systems
INVENTOR(S): Langlet, Abraham; Johansson, Martin
PATENT ASSIGNEE(S): Foersvarets Forskningsanstalt, Swed.
SOURCE: Swed., 4 pp.
CODEN: SSXXAY
DOCUMENT TYPE: Patent
LANGUAGE: Swedish
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SE 512394	C2	20000313	SE 1999-813	19990308
SE 9900813	A	19990429		

PRIORITY APPLN. INFO.: SE 1999-813 19990308

L4 ANSWER 129 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Prodn. of ADN prills includes (1) melting and dispersion of ADN in an apolar medium to obtain ADN drops, (2) cooling of the medium for solidification of the drops to form prills, and (3) sepn. of the prills from the medium. Dispersion is carried out by using ultrasound. Particle size of the prills is <40 .mu.m. The ADN prills are suitable as an oxidn. agent.

ACCESSION NUMBER: 2000:531854 CAPLUS
DOCUMENT NUMBER: 133:106980
TITLE: Production of ammonium dinitramide (ADN) prills by using ultrasound
INVENTOR(S): Langlet, Abraham; Johansson, Martin
PATENT ASSIGNEE(S): Foersvarets Forskningsanstalt, Swed.
SOURCE: Swed., 5 pp.
CODEN: SSXXAY
DOCUMENT TYPE: Patent
LANGUAGE: Swedish
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SE 512395	C2	20000313	SE 1999-814	19990308
SE 9900814	A	19990429		
PRIORITY APPLN. INFO.:			SE 1999-814	19990308

L4 ANSWER 130 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The fabrication of gas-actuated car safety devices, from which the chems. have been recovered when the device's normal service life has expired, uses a mixt. of guanidine dinitramide and guanylurea dinitramide as the gas-generating compn., which is recovered by low-temp. crystn. from water. The mixts. contain >50 wt.% guanidine dinitramide. Such gas-actuated safety devices include air bags, safety-belt tighteners, inflatable neck supports, etc.

ACCESSION NUMBER: 2000:475613 CAPLUS
DOCUMENT NUMBER: 133:76163
TITLE: Guanidine dinitramide-guanylurea dinitramide mixture for acutation of vehicle safety devices
INVENTOR(S): Sjoberg, Per
PATENT ASSIGNEE(S): Nexplo Bofors AB, Swed.
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000040523	A1	20000713	WO 1999-SE2496	19991229
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
SE 9804611	A	20000701	SE 1998-4611	19981230
SE 513315	C2	20000821		
EP 1171403	A1	20020116	EP 1999-965701	19991229
EP 1171403	B1	20030416		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
AT 237567	E	20030515	AT 1999-965701	19991229
PRIORITY APPLN. INFO.:			SE 1998-4611 A	19981230
			WO 1999-SE2496 W	19991229

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 131 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Kinetic consts. of decompn. were detd. for ADN and prilled ADN by DSC and TG. Pressure DSC at 550 psi air or helium had similar kinetic consts. for prilled ADN, namely 29 kcal/mol activation energy and a log frequency factor of .apprx. 14.0 min-1. These values were similar to those found in sealed sample pans in which the decompn. gases were confined. DSC and TG runs in open sample pans in nitrogen or helium had higher activation energies and frequency factors, namely 40-43 kcal/mol and 18-20 min-1, resp. Thus, it appears that confinement of the ADN decompn. gases either under pressurization or a sealed environment accelerates the decompn. of prilled ADN. Kinetics of decompn. of unprilled ADN at atm. pressure in nitrogen or helium by DSC and TG were Ea = 37 kcal/mol and log A = 17 min-1. Unprilled ADN had lower activation energies and frequency factor for decompn. than prilled ADN which contained stabilizers. The effect of sample containment (i.e. aluminum, coated aluminum, gold, and glass ampoules) on the shape of the DSC curve of ADN was investigated. Isothermal TG in vacuum of ADN in the 45-75.degree. region and the DSC anal. of the TG residues showed unusual results in the 60.degree. region. The rate and enthalpy of decompn. of four dinitramide salts and their dielec. relaxation were related to the basicity of the cation.

ACCESSION NUMBER: 2000:453527 CAPLUS
DOCUMENT NUMBER: 133:76145
TITLE: Thermal analysis of ammonium dinitramide (ADN)
AUTHOR(S): Tompa, A. S.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: Thermochimica Acta (2000), 357-358, 177-193
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 132 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

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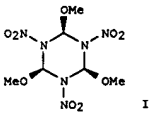
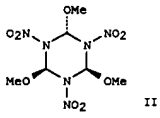


I



II

AB 1,3,5-Triazine reacted with N2O5 in MeNO2 followed by addn. of MeOH to give cis- and trans-trinitrotriazines I and II, resp. The crystal structures were detd. The mechanism of the reaction is also explored.

ACCESSION NUMBER: 2000:417313 CAPLUS
DOCUMENT NUMBER: 133:150525
TITLE: The nitration of 1,3,5-triazine with dinitrogen pentoxide
AUTHOR(S): Chafin, Andrew; Merwin, Lawrence
CORPORATE SOURCE: Materials Synthesis Branch Naval Air Warfare Center, Weapons Division, China Lake, CA, 93555, USA
SOURCE: Journal of Organic Chemistry (2000), 65(15), 4743-4744
CODEN: JOCEAH; ISSN: 0022-3263
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 133:150525
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 133 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB High-nitrogen gas generating compns., useful for inflating passenger restraint gas inflator bags, contain, as a secondary oxidant, a nitrogen-rich coordination compd. of general formula (NM)uMx[M'w(NO2)z], in which: (1) NM is a nonmetal cation, (2) M is an alkali metal or alk. earth metal ion, (3) M' is a Group 4-12 coordination (transition) metal, (4) u = 1-4, x = 0-3, w = 1-3, and z = 4 or 6 nitrito or nitro groups, depending on the stoichiometry of NM and M'. The nonmetal (NM) is selected from ammonia, hydrazine, hydroxylamine, and linear and cyclic amines (e.g., guanidine and guanidine derivs., tetrazole derivs., and aminofurazans). The gas-generating compns. generate relatively more gas and less solids, and are safer than azide-based gas-generating compns. Novel methods for the synthesis of nonmetal coordination complexes (e.g., with guanidine and hydrazine) were also presented.

ACCESSION NUMBER: 2000:415431 CAPLUS
DOCUMENT NUMBER: 133:60964
TITLE: High-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags
INVENTOR(S): Lundstrom, Norman H.; Begin, Laurence C.
PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA
SOURCE: U.S., 12 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6077371	A	20000620	US 1997-797398	19970210
WO 9836938	A2	19980827	WO 1998-US1750	19980129
WO 9836938	A3	19990325		
W: CA, JP, KR				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 964843	A2	19991222	EP 1998-911364	19980129
R: DE, FR, GB				
JP 2002508732	T2	20020319	JP 1998-536643	19980129

PRIORITY APPLN. INFO.: US 1997-797398 A 19970210
WO 1998-US1750 W 19980129
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 134 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review, with 26 refs., of the influence of mol. structure on the stability and decompn. kinetics of high-energy compds. Both monofunctional compds. and compds. with mixed functional groups were used.
The sites of primary decompn. were detd. and the mutual influence of functional groups on compd. stability were taken into account.

ACCESSION NUMBER: 2000:412572 CAPLUS
DOCUMENT NUMBER: 133:76138
TITLE: Thermal stability of high-energy compounds
AUTHOR(S): Nazin, G. M.; Prokudin, V. G.; Manelis, G. B.
CORPORATE SOURCE: Institute of Problems of Chemical Physics, Russian Academy of Sciences, Chernogolovka, 142432, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (2000), 49(2), 234-237
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 135 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Detonation velocities of confined cylinders of melt-cast ADN/ZnO (99.5/0.5
by wt.), ammonium dinitramide (ADN)/nano-diamond/ZnO (92.4/7.2/0.4), ADN/AN/ZnO (95.5/4.0/0.5) and ADN/AN/ZnO/nano-diamond (88.0/4.5/0.5/7.0) were measured using a streak camera. Velocities ranging between 3.9-4.5 mm/.mu.s were obtained for 1.3 cm diam. samples confined by steel and a 2.5 cm diam. ADN/AN/ZnO cylinder. In one of the samples the detonation was failing as it proceeded through the charge. For the other shots reported, the shock velocities appeared to be steady through the last half
of the charge, though the lengths were too short for any definitive statement about the failure diam. to be made.

ACCESSION NUMBER: 2000:390166 CAPLUS
DOCUMENT NUMBER: 133:19630
TITLE: Detonation velocity of melt-cast ADN and ADN/nano-diamond cylinders
AUTHOR(S): Doherty, R. M.; Forbes, J. W.; Lawrence, G. W.; Deiter, J. S.; Baker, R. N.; Ashwell, K. D.; Sutherland, G. T.
CORPORATE SOURCE: Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: AIP Conference Proceedings (2000), 505(Shock Compression of Condensed Matter, Pt. 2), 833-836
CODEN: APCPCS; ISSN: 0094-243X
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 136 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Prills are prepd. by melting a salt and introducing the molten salt into carrier liq. Oxidizing salts of ammonia, ammonium nitrate (AN) and ammonium dinitramide (ADN) are melted with a stabilizer and introduced by dry nitrogen pressure into an inert, perfluorinated carrier liq. of greater sp. gr. than the molten salts. In a first embodiment, the carrier
liq. is quiescent and below the salt solidification temp. so that prills solidify from drops of the salt rising through a column which substantially retains the liq. In a second and continuous embodiment, the
carrier liq. is initially above the solidification temp., and the salt is injected into the moving liq. which passes with the molten salt in turbulent flow through a heated conduit, in which stationary vanes disperse the salt into droplets, and then through a cooled conduit for solidification of the salt into prills without agglomeration. In the both
embodiments, the prills may be sepd. from the liq. by flotation and any liq. carried with the prills recycled. In the continuous embodiment, the main flow of carrier liq. is pumped through a preheater and then back to the molten salt injector.

ACCESSION NUMBER: 2000:388496 CAPLUS
DOCUMENT NUMBER: 133:6485
TITLE: Prilling by introduction of a molten liquid into a carrier liquid
INVENTOR(S): Wood, Stanley E.; Weinhardt, Robert A.
PATENT ASSIGNEE(S): United States of America, Secretary of the Navy, USA
SOURCE: U.S., 10 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6074581	A	20000613	US 1998-140062	19980824

PRIORITY APPLN. INFO.: US 1998-140062 19980824
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 137 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The described process aims to produce spherical ammonium dinitramide (ADN) particles of different sizes with a narrow particle size distribution. The crystn. process presented in this paper consists of two stages. In the first stage, molten ADN is dispersed in a continuous phase in which ADN is insol. The droplet size produced can be controlled by varying the amt. of mech. energy supplied to the two-phase system. In addn. to discussing the influence of the different process parameters, such as dispersion rate, dispersion power, emulsification time, etc. this paper also reports the influence of emulsifying agents and the rheol. behavior of the continuous phase. In the second stage of the process, crystn. of the emulsified ADN droplets to spherical, solid particles is obtained by reducing the temp. of the system. The process described enables prodn. of spherical ammonium dinitramide particles with mean sizes from 10-600 .mu.m. The product quality of the crystd. ADN, which is also discussed in this paper, was detd. by using various anal. techniques, including differential scanning calorimetry (DSC), IR spectroscopy, ion chromatog., and laser light diffraction spectrometry.

ACCESSION NUMBER: 2000:353864 CAPLUS
DOCUMENT NUMBER: 132:336493
TITLE: Crystallization of spherical ammonium dinitramide (ADN) particles
AUTHOR(S): Teipel, Ulrich; Heintz, Thomas; Krause, Horst H.
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal, D-76318, Germany
SOURCE: Propellants, Explosives, Pyrotechnics (2000), 25(2), 81-85
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 138 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ammonium dinitramide is stable high energetic oxidizer, with the monopropellant specific impulse of 2003.2 Ns/kg and the combustion temp. of 2100 K. Replacing ammonium perchlorate with ammonium dinitramide in HTPB propellant can increase specific impulse by 104.5 Ns/kg. The low signature propellant formed with GAP and ADN had a specific impulse of 2607 Ns/kg, and GAP/ADN/RDX propellant a specific impulse of 2630 Ns/kg.

ACCESSION NUMBER: 2000:344835 CAPLUS
DOCUMENT NUMBER: 133:6578
TITLE: Energetic characteristic of ammonium dinitramide propellants
AUTHOR(S): Liu, Jianhong; Tian, Deyu; Zhao, Yanhui; Pang, Aimin
CORPORATE SOURCE: Normal School, Shenzhen University, Shenzhen, 518060, Peop. Rep. China
SOURCE: Huozhayao Xuebao (2000), 23(2), 1-3
CODEN: HUXUFP
PUBLISHER: Zhongguo Bingqi Gongye Di-204 Yanjiuso
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 139 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Basic properties and spectroscopic data for the energetic oxidizer ADN (ammonium dinitramide (NH4N(NO2)2)) are presented. The ADN used for this work was synthesized by a new efficient and environmentally friendly method. The method is based on a direct nitration of salts of sulfamic acid by ordinary mixed acid, followed by neutralization and sepn. of the ADN by the use of an adsorption column. The heat of formation was measured by burning in hydrogen atm. in an adiabatic bomb calorimeter and was found to be 148 kJ/mol .+-. 10 kJ/mol. The m.p. was detd. using DSC technique and is 93.5.degree.. This paper reports drop wt., friction and bullet impact sensitivity data. The friction sensitivity of ADN is much lower than that of RDX. The impact sensitivity of ADN is of the same magnitude as that of RDX but varies a great deal with the morphol. of the particles, e.g. prilled ADN is nearly twice as insensitive as RDX. The bulk d. measured by powder X-ray diffraction and was found to be 1.82 gcm-3. ADN does not show any sign of phase transitions in the -150 to +80.degree. temp. interval (measured by single crystal X-ray diffraction). FTIR and FT-Raman spectra are also presented. In the UV-VIS region, ADN is characterized by two absorption peaks at 214 and 284 nm. UV-VIS spectroscopy was also found to be the most useful method for quant. routine anal. of ADN.

ACCESSION NUMBER: 2000:324508 CAPLUS
DOCUMENT NUMBER: 132:310466
TITLE: The properties of ammonium dinitramide (ADN): part 1, basic properties and spectroscopic data
AUTHOR(S): Ostmark, H.; Bemm, U.; Langlet, A.; Sanden, R.; Wingborg, N.
CORPORATE SOURCE: Energetic Materials Department, FOA, Defence Research Establishment, Stockholm, S-172 90, Swed.
SOURCE: Journal of Energetic Materials (2000), 18(2-3), 123-138
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 140 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The gas formation assocd. with the thermal decompns. of nineteen energetic materials was detd. at three temps. (120, 220 and 320.degree.). Although there was considerable variability within classes, among the largest producers of gas were the nitrate esters. PETN (pentaerythritol nitrate) generated .apprx. 6.3 mol gas per mol., while nitrocellulose, produced almost no gas. Second in gas prodn. were the nitramines, followed by nitroarenes and lastly, energetic salts. NTO (5-nitro-2, 4-dihydro-3H-1, 2, 4-triazol-3-one), which does not fit into the four main classes of energetic materials, exhibited gas prodn. (2.13 mol gas per mol. NTO) comparable with some nitroarenes and the energetic salt, ammonium dinitramide (ADN). For selected compds. gas evolution data was used to construct first-order plots, from which Arrhenius parameters were detd. and compared with previously reported values.

ACCESSION NUMBER: 2000:324507 CAPLUS
DOCUMENT NUMBER: 132:310465
TITLE: Gas production from thermal decomposition of explosives: assessing the thermal stabilities of energetic materials from gas production data
AUTHOR(S): Oxley, J. C.; Smith, J. L.; Rogers, E.; Dong, X. X.
CORPORATE SOURCE: Chemistry Department, University of Rhode Island, Kingston, RI, 02881, USA
SOURCE: Journal of Energetic Materials (2000), 18(2-3), 97-121
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 141 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Initiation of a liq. in U- or V- shaped channels at fast compression of air cavity is described. Liq. energetic materials are divided in terms of the limiting pressure necessary for initiation into three main groups. The first of them includes very sensitive substances (NG, Methylnitrate, NGL, FEFO, ADN melt, etc.) which are able to explode in the range of initial driving pressures from 8-23 atm. Compds. of moderate sensitivity (TNT melt and DNT/Nitric Acid 70/30 soln.) are initiated in the range of 60-80 atm. At last, explosives of the third group assumed to be insensitive liqs. (NM, TNM, water-impregnated compds.) can not be ignited at the limiting pressure of the installation, approx. 100 atm. A theory of ignition at fast compression of gas inclusions is developed. It is shown particularly that self-sustaining burning of a liq. may develop only if rate of gas evolution stipulated by burning compensates a drop of pressure due to expansion of the gap. It is taken into account that at very high final pressure in the gap the strong compression of the liq. and expansion of the tube take place followed by the loss of energy and corresponding limiting pressure enhancement.
ACCESSION NUMBER: 2000:311785 CAPLUS
DOCUMENT NUMBER: 132:310460
TITLE: Modification of the model of initiation of a liquid in U-shaped tube
AUTHOR(S): Kondrikov, B. N.; Dorofeev, E. I.
CORPORATE SOURCE: Mendeleev University of Chemical Technology, Moscow, Russia
SOURCE: Proceedings of the International Pyrotechnics Seminar (1999), 25th(7e Congres International de Pyrotechnie du "Groupe de Travail de Pyrotechnie", 1999, Vol. 1), 209-221
CODEN: PPYSD7; ISSN: 0270-1898
PUBLISHER: IIT Research Institute
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 142 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The combustion is studied of ammonium dinitramide (ADN)-contg. propellant compns. The combustion characteristics is sensitive to the granule microstructure. The combustion characteristics can be improved adjusting the microstructural properties of the granules. The effect of microstructure is not detected during std. measurement of the combustion rate that gives averaged values of the combustion rates. The effect of microstructure is detected in the local combustion rates and recorded as noise that disappears during averaging. The data that supplement std. method for measuring characteristics of propellant can be obtained by filming of the combustion of the propellant. The scattering of the combustion rate can be decreased and efficiency of the propellant can be increased by using ADN granules.
ACCESSION NUMBER: 2000:273918 CAPLUS
DOCUMENT NUMBER: 132:281274
TITLE: Study of combustion of energetic materials with propellant compositions containing granulated ADN
AUTHOR(S): Ramasvami, A. O.
CORPORATE SOURCE: Univ. Maryland, College Park, MD, USA
SOURCE: Fizika Goreniya i Vzryva (2000), 36(1), 131-137
CODEN: FGVZA7; ISSN: 0430-6228
PUBLISHER: Izdatel'stvo Sibirskogo Otdeleniya RAN
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 143 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A numerical anal. has been developed to study the detailed phys. and chem. processes involved in ADN combustion. The anal. is based on the conservation equations of mass, species concn. and energy for both condensed and gas phases, and takes into account finite-rate chem. kinetics and variable thermophys. properties. A chem. kinetics scheme, contg. totally 33 species and more than 180 reactions, has been established to investigate the gas-phase flame structure. The anal. has been applied to ADN self-deflagration at 6 atm with the measured surface compn. used as the boundary condition. Results show good agreement with exptl. data in terms of the temp. and species concn. profiles in the gas-phase flame. Sublimation and dissocn. of ADN to NH3, HN(NO2)2, N2O, and HNO3 are believed to be the major initial decompn. processes. However, surface conditions derived from these processes fail to model the measured gas-phase flame structure well if the kinetics scheme is employed.
ACCESSION NUMBER: 2000:256881 CAPLUS
DOCUMENT NUMBER: 132:267204
TITLE: Analysis of ammonium dinitramide (ADN) combustion with detailed chemistry
AUTHOR(S): Liau, Y.-C.; Yang, V.; Lin, M. C.; Park, J.
CORPORATE SOURCE: Los Alamos National Laboratory, Los Alamos, NM, 87545, USA
SOURCE: CPIA Publication (1998), 685(JANNAF 35th Combustion Subcommittee and 17th Propulsion Systems Hazards Subcommittee Meeting, Joint Sessions, 1998), 13-30
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 144 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A preliminary report was given on the development of propellants for insensitive munitions (IM) based on a low-cost polymer, hydroxy-terminated caprolactone ether (THF-oxirane block copolymer) (I). For high-energy propellants, dioctyl adipate (DOA) is the plasticizer of choice. I is available com. for <$4.00/lb in 55-gal drums, compared with the DOA price of <$1.50/lb in 55-gal drums. Comparisons were presented for various combinations of plasticizers and oxidizers, including burning rate data and mech. property data. I was crosslinked with di- and polyfunctional isocyanates. BuNENA was the plasticizer of choice.
ACCESSION NUMBER: 2000:242510 CAPLUS
DOCUMENT NUMBER: 132:253200
TITLE: Low cost binder for IM applications
AUTHOR(S): Tzeng, D. D.; Jones, M. L.
CORPORATE SOURCE: United Technologies/Space Propulsion, Chemical Systems Division, San Jose, CA, USA
SOURCE: CPIA Publication (1998), 675(1998 JANNAF Propulsion Meeting, Vol. 1), 97-99
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 145 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The thermal initiation by electron beam heating (and calibrated hot stage), of single crystals and prills of ADN, was filmed/recorded in an environmental scanning electron microscope, from the formation of microscopic "reaction sites" (0.01 .mu.m in diam.) to full crystal consumption. The transformations of the ADN prills and crystals were compared and recorded in real time at various magnifications (x10, 000-100) and under different atmospheres (pure nitrogen and nitrogen/water vapor mixts.). The initiation characteristics of the prills and crystals were found to differ and are related to the microstructural characteristics produced by different prill manufg. techniques namely, the "prilling tower" technique (Thiokol) and the "melt-stir" technique (CSD).

ACCESSION NUMBER: 2000:154670 CAPLUS
DOCUMENT NUMBER: 132:168367
TITLE: Study of the thermal initiation of ammonium dinitramide (ADN) crystals and prills
AUTHOR(S): Ramaswamy, Alba L.
CORPORATE SOURCE: Dept. of Electrical Engineering, University of Maryland at College Park, MD, 20742, USA
SOURCE: Journal of Energetic Materials (2000), 18(1), 39-60
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 146 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review with 10 refs. of the advances in thermal decompn. of ammonium dinitramide (ADN) and combustion of ADN propellant with the emphasis on the thermal stability and thermal decompn. mechanism of ADN, combustion mechanism of ADN and ADN-contg. propellants. The ADN application prospect is also briefly discussed.

ACCESSION NUMBER: 2000:148857 CAPLUS
DOCUMENT NUMBER: 132:154029
TITLE: Advances in study of thermal decomposition of ammonium dinitramide and combustion of ADN propellants
AUTHOR(S): Zhao, Feng-qi; Yang, Dong; Cai, Bing-yuan; Li, Shang-wen
CORPORATE SOURCE: Xi'an Modern Chem. Res. Inst., Xi'an, 710065, Peop. Rep. China
SOURCE: Hanneng Cailiao (1999), 7(4), 149-151
CODEN: HACAFQ; ISSN: 1006-9941
PUBLISHER: Hanneng Cailiao Bianjibu
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Chinese

L4 ANSWER 147 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A new method was designed to synthesize ammonium dinitramide (ADN) from 3-aminopropionitrile. The product structure was identified and some properties were detd. (e.g., m.p. 90 to .apprx.92.degree.; decompn. point 252.degree.; d. 1.80 g/cm3; impact sensitivity, H50 (2 kg, 30 mg) 24 cm, friction sensitivity (66.degree., 2.45 MPa, 20 mg) 14%; and heat of combustion 517 kJ/mol). The condensation and second nitration were studied as the crit. steps of ADN synthesis.

ACCESSION NUMBER: 2000:148855 CAPLUS
DOCUMENT NUMBER: 132:154037
TITLE: Synthesis and properties of ADN. (I)
AUTHOR(S): Wang, Bo-zhou; Zhang, Zhi-zhong; Zhu, Chun-hua; He, Jiang-tao; Lei, Ming
CORPORATE SOURCE: Xi'an Modern Chem. Res. Inst., Xi'an, 710065, Peop. Rep. China
SOURCE: Hanneng Cailiao (1999), 7(4), 145-148
CODEN: HACAFQ; ISSN: 1006-9941
PUBLISHER: Hanneng Cailiao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 148 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The synthesis and properties of a new class of inorg. salts, named pentafluorosulfanylnitramide salts (or pentafluorosulfanylnitraminic acid salts) [Z+SF5NNO2-], are described. A no. of SF5-nitramide salts (Z+SF5NNO2-) were successfully prepd. via nucleophilic displacements from carbamates and/or ion exchange techniques, but some salts [M(SF5NNO2)x; M = Li, Mg, Al] decompd. during isolation procedures and appear to be unstable in the solid state. Single-crystal x-ray diffraction was used to fully characterize the Z+SF5NNO2-, and their properties/structures are compared with those of the corresponding dinitramide salts (or dinitraminic acid salts), Z+N(NO2)2-. X-ray crystallog. revealed major structural differences between N(NO2)2- and SF5N(NO2)- salts concerning the N-N distances and the angles subtended at the central N atom. In the N(NO2)2- salts, there are two nonequivalent N-N (av. lengths 1.372(2) and 1.354(2) .ANG.) distances and an av. N-N-N angle of 115.8(3).degree. (falls between sp3 and sp2 hybridization). In the SF5NNO2- salts, the av. N-N distance is much shorter, 1.308(9) .ANG., and the av. N-N-S angle is 120.0(5).degree. (closely fits sp2 hybridization). The SF5NNO2- salts show a remarkable metrical similarity for the SF5 moiety in all structures, indicating a lack of sensitivity to its steric and electronic environment. This is in marked contrast to N(NO2)2-, where there is a wide variation in conformations adopted by these anions which can be related to their environment.

ACCESSION NUMBER: 2000:118432 CAPLUS
DOCUMENT NUMBER: 132:259620
TITLE: Pentafluorosulfanylnitramide Salts
AUTHOR(S): Sitzmann, Michael E.; Gilardi, Richard; Butcher, Ray J.; Koppes, William M.; Stern, Alfred G.; Thrasher, Joseph S.; Trivedi, Nirupam J.; Yang, Zhen-Yu
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640, USA
SOURCE: Inorganic Chemistry (2000), 39(4), 843-850
CODEN: INOCAJ; ISSN: 0020-1669
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 149 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The dependence of calcd. specific impulse of composite solid rocket fuels that contain aluminum hydride, oxidizers, and polymeric binders on the quantity of components, chem. compn., stand. enthalpy of formation, and d. of oxidizer and polymeric fuel-binder. High impulse of the composite solid rocket fuels with aluminum hydride can be obtained by using active binders that contain nitro, nitroamino, and nitroester, and other oxygen contg. groups with high heat content. For existing oxidizers with aluminum hydride in the presence of active binders, higher specific impulse is obtained than the compns. with metallic aluminum. The use of various active binders depending on the chem. compn. and heat content can cause the variation of relative efficiency of the oxidizers. The use of composite oxidizers can lead to significant increase of energy compared to the use of single oxidizer.

ACCESSION NUMBER: 2000:88887 CAPLUS
DOCUMENT NUMBER: 132:110167
TITLE: Energetics of composite solid rocket fuels containing aluminum hydride
AUTHOR(S): Lempert, D. B.; Soglasnova, S. I.; Nechiporenko, G. N.
CORPORATE SOURCE: Inst. Probl. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia
SOURCE: Khimicheskaya Fizika (1999), 18(9), 88-96
CODEN: KHFID9; ISSN: 0207-401X
PUBLISHER: Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 150 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Once the burning rate as a function of initial temp. has been measured for a particular material, it is often desirable to report its burning rate temp. sensitivity as a single value that can then be used in other applications. A few of the obstacles encountered when making the detn. of burning rate temp. sensitivity, .sigma.p, are examd. Burning rate temp. sensitivity was evaluated for the neat ingredients AP, HMX, RDX, ADN, CL-20, and HNF.

ACCESSION NUMBER: 2000:39195 CAPLUS
DOCUMENT NUMBER: 132:66220
TITLE: Burning rate of solid propellant ingredients, part 2: determination of burning rate temperature sensitivity
AUTHOR(S): Atwood, A. I.; Boggs, T. L.; Curran, P. O.; Parr, T. P.; Hanson-Parr, D. M.; Price, C. F.; Wiknich, J.
CORPORATE SOURCE: U.S. Naval Air Warfare Center, China Lake, CA, 93555, USA
SOURCE: Journal of Propulsion and Power (1999), 15(6), 748-752
CODEN: JPPOEL; ISSN: 0748-4658
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 151 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Burning rate data are presented with respect to initial temp. and pressure for three compds. that are currently used in propellant and explosive formulations. The dependence of burning rate on initial temp. and pressure is presented for ammonium perchlorate (AP), HMX, and RDX. Data for ingredients being considered for advanced propellants, such as CL-20, ammonium dinitramide (ADN), and hydrazinium nitroformate (HNF) are also presented and compared to the more traditional compds. These ingredients are all capable of self-deflagration, and their behavior often controls the behavior of the propellants in which they are the main ingredients.

ACCESSION NUMBER: 2000:39194 CAPLUS
DOCUMENT NUMBER: 132:66219
TITLE: Burning rate of solid propellant ingredients, part 1: pressure and initial temperature effects
AUTHOR(S): Atwood, A. I.; Boggs, T. L.; Curran, P. O.; Parr, T. P.; Hanson-Parr, D. M.; Price, C. F.; Wiknich, J.
CORPORATE SOURCE: U.S. Naval Air Warfare Center, China Lake, CA, 93555, USA
SOURCE: Journal of Propulsion and Power (1999), 15(6), 740-747
CODEN: JPPOEL; ISSN: 0748-4658
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 152 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Similar UV/Vis/IR emission spectra were recorded when burning rocket propellant strands (RDX, RDX/estane, ADN) or pool fires of fuels and solvents (nitromethane, isooctane, isopropanol). Flame temps., reaction zone profiles, and state parameters of intermediate combustion radicals were detd. by anal. of band spectra of the emitting diat. species (OH, NH, CN) and quant. anal. of water emissions. Fast scanning spectrometers and analyzing tools developed to characterize rocket plumes and the burning zone of propellants for military purposes, can be applied successfully to investigate accident fires and explosions.

ACCESSION NUMBER: 2000:14583 CAPLUS
DOCUMENT NUMBER: 132:66240
TITLE: From rocket exhaust plume to fire hazards
AUTHOR(S): Weiser, V.; Eisenreich, N.; Eckl, W.
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal, D-76318, Germany
SOURCE: NATO Science Series, 1: Disarmament Technologies (1999), 26(Prevention of Hazardous Fires and Explosions), 61-76
CODEN: NSDTF8; ISSN: 1389-1820
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 153 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A gas generating compn. for an inflatable vehicle occupant protection device comprises an oxidizer, a fuel, and preferably a binder, in which the fuel is a dinitramide salt with general formula X+[N(NO2)2]n-, in which n .gtoreq.1 and X+ is the cation of an org. compd. with .gtoreq.1 tetravalent nitrogen atoms. The ammonium salt preferably has a m.p. .gtoreq.125.degree. (esp. guanidinium dinitramide). A preferred oxidizer is phase-stabilized ammonium nitrate. The preferred compn. consists of <80 wt.% oxidizer and has a burn rate of >0.2 in./s at 13.8 MPa.

ACCESSION NUMBER: 1999:808506 CAPLUS
DOCUMENT NUMBER: 132:24485
TITLE: Amine salts of dinitramide as gas generator compositions for inflatable vehicle occupant protection devices
INVENTOR(S): Blomquist, Harold R.
PATENT ASSIGNEE(S): TRW Inc., USA
SOURCE: U.S., 9 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6004410	A	19991221	US 1998-123821	19980728
US 6117255	A	20000912	US 1999-359248	19990722
DE 19935187	A1	20000302	DE 1999-19935187	19990727

PRIORITY APPLN. INFO.: US 1998-123821 A2 19980728
OTHER SOURCE(S): MARPAT 132:24485
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 154 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The model-free and model-fitting kinetic approaches were applied to data for nonisothermal and isothermal thermal decompns. of HMX and ammonium dinitramide. The popular model-fitting approach gave excellent fits for both isothermal and nonisothermal data but yielded highly uncertain values of the Arrhenius parameters when applied to nonisothermal data. These values cannot be meaningfully compared with values derived from isothermal measurements, nor they can be used to reasonably predict the isothermal kinetics. On the other hand, the model-free approach represented by the isoconversional method yielded similar dependencies of the activation energy on the extent of conversion for isothermal and nonisothermal expts. The dependence derived from nonisothermal data gave reliable predictions of the isothermal kinetics. The use of the model-free approach was recommended as a trustworthy way of obtaining reliable and consistent kinetic information from both nonisothermal and isothermal data.

ACCESSION NUMBER: 1999:795175 CAPLUS
DOCUMENT NUMBER: 132:66216
TITLE: Model-free and model-fitting approaches to kinetic analysis of isothermal and nonisothermal data
AUTHOR(S): Vyazovkin, S.; Wight, C. A.
CORPORATE SOURCE: Department of Chemistry, Center for Thermal Analysis, University of Utah, Salt Lake City, UT, 84112, USA
SOURCE: Thermochimica Acta (1999), 340-341, 53-68
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 155 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB 4-Nitro- and 2,4-dinitrotoluenes reacted with tetranitro- and halotrinitromethanes in the presence of bases to give nitro-substituted 1,2-diphenylethanes and stilbenes. Thus, reaction of 4-O2NC6H4Me with BrC(NO2)3 in THF contg. Me3COK gave 5% 1,2-bis(4-nitrophenyl)ethane and 64% trans-4,4'-dinitrostilbene. Reaction of 2,4,6-trinitrotoluene with fluorotrinitromethane, N,N-dinitromethylamine, and tert-Bu and iso-Pr nitrates gave .alpha.,2,4,6-tetranitrotoluene; reaction with chlorotrinitromethane gave 2,4,6-trinitrobenzyl chloride.

ACCESSION NUMBER: 1999:738033 CAPLUS
DOCUMENT NUMBER: 132:122330
TITLE: Radical ion reactions of carbanions derived from 4-nitro-, 2,4-dinitro-, and 2,4,6-trinitrotoluenes with polynitroalkanes
AUTHOR(S): Makarevich, A. V.; Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.
CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, 198013, Russia
SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (1999), 35(5), 684-692
CODEN: RJOCEQ; ISSN: 1070-4280
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 66 THERE ARE 66 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 156 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB To sep. ammonium dinitramide from the reaction mixt. obtained in the reaction between NO2HS2O7 and nitramine in acetonitrile and subsequent neutralization with NH3aqua the following procedure was applied: sepn. of the solid pptd. during the reactions; evapn. of the acetonitrile soln.; extn. of the obtained solid with isopropanol; evapn. of the isopropanol soln.; and crystn. this way obtained crude ammonium dinitramide from Et acetate. According to the crude ammonium dinitramide concn. in the crystn. solvent, products with various compns. were obtained. For detd. concns. good yield and selectivity of the crystn. were attained. IR, TG, DTA, and elementary anal. examd. the selected products of the sepns. what allowed connecting the recorded spectra and thermographs with detd. purity of ammonium dinitramide samples.

ACCESSION NUMBER: 1999:729252 CAPLUS
DOCUMENT NUMBER: 131:339062
TITLE: Separation of ammonium dinitramide from reaction mixture
AUTHOR(S): Malesa, Monika; Skupinski, Wincenty; Jamroz, Michal
CORPORATE SOURCE: Division of Highenergetics Materials, Faculty of Chemistry, Warsaw University of Technology (Politechnika), Warsaw, 00-664, Pol.
SOURCE: Propellants, Explosives, Pyrotechnics (1999), 24(2), 83-89
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 157 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ab initio calcns. of the structures and energies of the mono-, di-, and trinitrosamides are compared to mono-, di-, and trinitramides. Highly accurate std. heats of formation of this series of nitramides and nitrosamides are calcd. using isodesmic reactions and high-level theories.

The nitrosamides have heats of formation at 0 K that are 20-40 kcal/mol higher than the analogous nitramides. The N-N bond strengths are comparable whether a NO or NO2 group is bonded to the central nitrogen atom. The data suggest that converting the nitro groups to nitroso groups

will result in compds. that have lower wt., shorter N-N bond lengths, and higher energy content, at the expense of lower oxygen balance. This suggests that nitrosamides are potentially useful high-energy materials. A revised .DELTA.Hf.degree. for NH2NO2 is proposed to be 3.8 kcal/mol at 0

K, in close agreement with previous theory and very different from expt. Recommended values for .DELTA.Hf.degree. are 34 and 71 kcal/mol for di- and trinitramide, resp., and 22, 65, and 112 kcal/mol for mono-, di- and trinitrosamide, resp. The errors in the monosubstituted mols. are estd. at 1 kcal/mol, and the errors are estd. at .+-.2 and .+-.3 kcal/mol for the di- and trisubstituted mols., resp. Nitrosamides have bond strengths comparable to those of the nitramides.

ACCESSION NUMBER: 1999:726727 CAPLUS
DOCUMENT NUMBER: 132:41193
TITLE: Ab Initio Calculation of the Heats of Formation of Nitrosamides: Comparison with Nitramides
AUTHOR(S): Chen, Zhi; Hamilton, Tracy P.
CORPORATE SOURCE: Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL, 35294-1240, USA
SOURCE: Journal of Physical Chemistry A (1999), 103(50), 11026-11033
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 158 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The combustion rates are studied of ammonium dinitramidate and its mixts. with various org. fuels. The dependence of the combustion rate of various

dinitramidate samples on the pressure, relative decrease of the combustion

rate of the dinitramidate in the presence of various fuels as a function of excess coeff. of the oxidizer (e.g., anthracene, succinic acid), regions of variation of the combustion rate of the dinitramidate-fuel mixts. at various pressures and combustion rates of individual dinitramidate, and the dependence of the combustion rates of dinitramidate-fuel mixts. (2,4-dinitrophenol, diphenylamine, urotropin, anthracene, phenanthrene, m-dinitrobenzene, hydroquinone, resorcin, phthalic acid, adipic acid, succinic acid, and oxamide) on the combustion temp. are presented graphically and analyzed.

ACCESSION NUMBER: 1999:726632 CAPLUS
DOCUMENT NUMBER: 131:312220
TITLE: Combustion of ammonium dinitramidate and its mixtures with organic fuels
AUTHOR(S): Dinisyuk, A. P.; Kuleshova, T. M.; Shepelev, Yu. G.
CORPORATE SOURCE: Ross. Khim.-Tekhnol. Univ. im. D.I. Mendeleeva, Moscow, Russia
SOURCE: Doklady Akademii Nauk (1999), 368(3), 350-353
CODEN: DAKNEQ; ISSN: 0869-5652
PUBLISHER: MAIK Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 159 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The application of ADN for an effective oxidizer of propellants and explosives requires a detailed knowledge of the burning behavior. The phys. and chem. mechanisms of the combustion depend on pressure. Esp. profiles of temp. and species in the flame are important to design propellant formulation of high performance and low signature of the rocket

plume. In the presented study, pure ADN and ADN/paraffin mixts. were investigated as strands in an optical bomb at pressures of 0.5-10 MPa. The application of non-intrusive combustion diagnostics for the investigation of fast burning energetic materials allowed the measurement of burning rates and profiles of temp. and gas components at various distances above the burning propellant surface. The burning rate was detd. by using a video system and a special frame anal. The acquisition and anal. of emission spectra in the UV/VIS allowed the investigation of rotational temps., the detn. of particle temps. and the identification of transient flame radicals. The vibrational temps. of final combustion products resulted from band spectra emitted in the near and mid IR spectral range. Burning rates of 5-70 mm/s were recorded showing a mesa/plateau-effect in the pressure range of 4-7 MPa. The UV/VIS spectra indicated an emission from OH, NH and CN radicals. The strong emission of

OH bands of the ADN/paraffin mixt. allowed the investigation of rotational

temps. with a mean value of 2700 K which is closely below the adiabatic flame temp. of 2950 K. Addnl., one-dimensional intensity profiles of the flame radicals were measured. As combustion end products H2O, CO, CO2 and

NO were found. NO could only be detected at a distance up to 2 mm above the propellant surface. The measured CO/CO2 fraction was higher as 10/1. Water could only be detected far above the propellant surface.

ACCESSION NUMBER: 1999:726254 CAPLUS
DOCUMENT NUMBER: 131:339017
TITLE: Burning behaviour of ADN formulations
AUTHOR(S): Weiser, Volker; Eisenreich, Norbert; Baier, Andrea; Eckl, Wilhelm
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal-Berghausen, D-76327, Germany
SOURCE: Propellants, Explosives, Pyrotechnics (1999), 24(3), 163-167
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 160 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal decompn. products of five alkali metal dinitramides were examd. by mass spectral and x-ray diffraction anal. All five salt residues (Li, Na, K, Rb, and Cs) showed no evidence of the parent dinitramide by mass spectrometry and showed only the presence of metal nitrate adducts. X-ray diffraction patterns of the decay residues matched

JCPDS ref. patterns and confirmed that the dinitramide salts thermally decompd. to their resp. alkali metal nitrate.

ACCESSION NUMBER: 1999:726226 CAPLUS
DOCUMENT NUMBER: 131:353274
TITLE: Evidence of nitrate formation from the thermal decay of alkali metal dinitramides
AUTHOR(S): Cliff, Matthew D.; Smith, Matthew W.; Edwards, Darren P.
CORPORATE SOURCE: Aeronautical and Maritime Research Laboratory (AMRL)-DSTO, Salisbury, 5108, Australia
SOURCE: Propellants, Explosives, Pyrotechnics (1999), 24(1), 43-45
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 161 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Kinetics of the thermal decompn. of dinitramide (HDN) in aq. solns. and of
NH4N(NO2)2 (ADN) and KN(NO2)2 (KDN) in sulfuric acid, nitric acid and anhyd. acetic acid solns. was studied. The species N(NO2)2-, HN(NO2)2 and
H2N(NO2)2+ were established to take part in the decompn. over a wide range
of the medium acidity. Kinetic regularities of their thermal decompn. were detd. The role of the decompn. of dinitramide at the initial and self-acceleration stages of the decompn. of ADN was detd. The most likely
mechanism of the decompn. of dinitramide, N(NO2)2- and H2N(NO2)2+ was proposed.

ACCESSION NUMBER: 1999:726225 CAPLUS
DOCUMENT NUMBER: 131:339050
TITLE: Kinetics and mechanism of thermal decomposition of dinitramide
AUTHOR(S): Kazakov, Anatolii I.; Rubtsov, Yurii I.; Manelis, Georgii B.
CORPORATE SOURCE: Institute of Chemical Physics Research, Russian Academy of Sciences, Chernogolovka, 142432, Russia
SOURCE: Propellants, Explosives, Pyrotechnics (1999), 24(1), 37-42
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 162 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The synthesis and properties of several new energetic 1,2,4,5-tetrazine derivs. are described. These include energetic salts of 3,6-dihydrazino-1,2,4,5-tetrazine and several sym. and unsym. substituted tetrazines with energetic substituents, in addn. to a new nitrotetrazine.

ACCESSION NUMBER: 1999:713985 CAPLUS
DOCUMENT NUMBER: 132:93294
TITLE: 1,2,4,5-Tetrazine-based energetic materials
AUTHOR(S): Chavez, David E.; Hiskey, Michael A.
CORPORATE SOURCE: Group DX-2, High-Explosives Science and Technology, Los Alamos National Laboratory, Los Alamos, NM, 87545,
USA
SOURCE: Journal of Energetic Materials (1999), 17(4), 357-377
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 163 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The 15N-NMR chem. shifts, .delta., of 23 nitramines, were given and their relationships to detonation performance parameters were evaluated. A relationship was confirmed between the squares of detonation velocities or, as the case may be, the detonation heats, and the 15N-NMR chem. shift values of nitrogen atoms in the nitro group of the nitramines. This relationship was in a form of the Evans-Polanyi-Semenov equation and, as such, it directly specified the most reactive nitro group of nitramine mol. in the detonation and, hence, the N-NO2 bond broken first in the detonation process.

ACCESSION NUMBER: 1999:713982 CAPLUS
DOCUMENT NUMBER: 131:353273
TITLE: Relationship between detonation characteristics and 15N NMR chemical shifts of nitramines
AUTHOR(S): Zeman, Svatopluk
CORPORATE SOURCE: Department of Theory and Technology of Explosives, University of Pardubice, Pardubice, CZ-532 10, Czech Rep.
SOURCE: Journal of Energetic Materials (1999), 17(4), 305-330
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 164 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Prepn. of uniformly shaped particles of meltable propellants and explosives as well as oxidizing agents, esp. ammonium dinitramide (ADN), consists of the following steps: (1) melting of the starting material, (2)
emulsification of the melt into a matrix fluid, in which the material is insol. or only slightly sol., and (3) cooling of the emulsion to below the
m.p. of the material, in which the dispersed droplets undergo recrystn. to
solid particles. An oil, esp. a paraffin oil or a silicone oil, is used as the matrix fluid. Cooling of the emulsion can be carried out with the addn. of additives, crystn. initiators, or stabilizers and can be modified
by mech. energy (e.g., stirring) or irradn. with ultrasound. The process can prep. uniformly shaped, esp. spherical, particles of propellant and explosives or oxidizing agents, with defined particle size, in which the diam. can be varied over a range from a few .mu.m up to several mm.

ACCESSION NUMBER: 1999:684263 CAPLUS
DOCUMENT NUMBER: 131:288481
TITLE: Production of uniformly shaped and sized particles of meltable propellants, explosives, and oxidizing agents
INVENTOR(S): Teipel, Ulrich; Leisinger, Karlfred; Krause, Horst; Heintz, Thomas
PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft zur Foerderung der Angewandten
Forschung e.V., Germany
SOURCE: Ger. Offen., 6 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19816853	A1	19991021	DE 1998-19816853	19980416
EP 953555	A1	19991103	EP 1999-105812	19990323

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

PRIORITY APPLN. INFO.: DE 1998-19816853 19980416
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 165 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Monopropellant compns. for propulsion or gas generation consist of a soln. of hydrazinium nitroformate and/or ammonium dinitramide in water, optionally contg. lower alcs. (esp. MeOH or EtOH) as a supplemental fuel. Addnl. components that may also be present include solubilizers, vapor pressure decreasing agents, and performance improving agents. The compns. are useful as propellants for spacecraft orientation or positioning, spacecraft thrusters, and emergency propellants for jet aircraft fighters and submarines.

ACCESSION NUMBER: 1999:672353 CAPLUS
DOCUMENT NUMBER: 131:288475
TITLE: monopropellant formulations for gas generation or propulsion of spacecraft, submarines, and jet aircraft
INVENTOR(S): Van den Berg, Ronald Peter; Mul, Johannes Maria; Elands, Petrus Johannes Maria
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek TNO, Neth.
SOURCE: Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 950648	A1	19991020	EP 1998-201190	19980415
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2328923	AA	19991021	CA 1999-2328923	19990414
WO 9952839	A1	19991021	WO 1999-NL216	19990414
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9933464	A1	19991101	AU 1999-33464	19990414
BR 9909684	A	20001219	BR 1999-9684	19990414
EP 1070031	A1	20010124	EP 1999-914804	19990414
EP 1070031	B1	20021127		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
JP 2002511382	T2	20020416	JP 2000-543403	19990414
AT 228492	E	20021215	AT 1999-914804	19990414
ES 2188150	T3	20030616	ES 1999-914804	19990414
NO 2000005188	A	20001025	NO 2000-5188	20001016

PRIORITY APPLN. INFO.: EP 1998-201190 A 19980415
WO 1999-NL216 W 19990414

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 166 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In this paper, the thermal decompn. is studied of potassium dinitramide (KDN) by means of thermal anal. and FT-IR with in situ cell. The results show that the decompn. of KDN in solid state is different from that of liq. state. The main condensed phase product of the decompn. in solid state is KNO3. While the decompn. of liq. state form KNO3 and KNO2 simultaneously. The possible mechanism of the thermal decompn. in solid state has been proposed. A eutectic can be formed by product KNO3 with KDN. The eutectic temp. of KNO3/KDN system is .apprx. 109.degree.. Moreover another eutectic system can be formed by KNO with KNO2 to be eutectic temp. of .apprx. 315.

ACCESSION NUMBER: 1999:637380 CAPLUS
DOCUMENT NUMBER: 131:324588
TITLE: The thermal behavior of potassium dinitramide Part 2. Mechanism of thermal decomposition
AUTHOR(S): Lei, M.; Liu, Z.-R.; Kong, Y.-H.; Yin, C.-M.; Wang, B.-Z.; Wang, Y.; Zhang, P.
CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xian, Peop. Rep. China
SOURCE: Thermochimica Acta (1999), 335(1-2), 113-120
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 167 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In this paper, thermal anal., X-ray photoelec. spectroscopy (XPS), etc. were used to investigate the thermal stability of potassium dinitramide (KDN). The thermal decompn. of KDN crystal conformed to the topochem. The decompn. product, KNO3, formed eutectic system with KDN and decreased the liquefaction temp. of KDN.

ACCESSION NUMBER: 1999:637377 CAPLUS
DOCUMENT NUMBER: 131:324587
TITLE: The thermal behavior of potassium dinitramide. Part 1. Thermal stability
AUTHOR(S): Lei, M.; Zhang, Z.-Z.; Kong, Y.-H.; Liu, Z.-R.; Zhu, C.-H.; Shao, Y.-H.; Zhang, P.
CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xian, Peop. Rep. China
SOURCE: Thermochimica Acta (1999), 335(1-2), 105-112
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 168 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB An airbag inflation device is equipped with a chamber holding a flammable material that contains a 0.5-30 wt.% (based on the total wt. of flammable material) binding agent chosen from cellulose acetate butyrate and cellulose acetate propionate (with a m.p. of .apprx.230.degree. to .apprx.260.degree.), and an igniter for the flammable material. The cellulose acetate butyrate has a Bu group content of .gtoreq.17 wt.%. The flammable material also contains: (1) non-metallic nitrogen-contg. compds. selected from nitroguanidine, triaminoguanidine nitrate, ethylenedinitramine, ethylenediamine dinitrate, 1,3,3-trinitroazetidine, RDX, HMX, trinitrotoluene, 2,4,6-trinitrophenylmethylnitramine, and PETN (including mixts. of these compds.), and (2) up to 60 wt.% of an oxidizing agent selected from ammonium nitrate, alkali and alk. earth nitrates, ammonium perchlorate, alkali and alk. earth perchlorates, organoammonium nitrates, and ammonium dinitramide.

ACCESSION NUMBER: 1999:635585 CAPLUS
DOCUMENT NUMBER: 131:230640
TITLE: Propellant compositions for inflation of vehicle airbags consisting of nitrogen-containing fuel, oxidant, and cellulose ester binder
INVENTOR(S): Mangum, Michael G.; Ouart, David C.
PATENT ASSIGNEE(S): TRW Inc., USA
SOURCE: Ger. Offen., 16 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19852318	A1	19990930	DE 1998-19852318	19981112

PRIORITY APPLN. INFO.: US 1997-969128 19971111

L4 ANSWER 169 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The 15N-NMR chem. shifts (.delta.) of 24 nitramines [including 3 newly synthesized substances (e.g., 1-nitro-1-azaethylene, 1,3-dinitro-1,3-diazacyclobutane, and 1,3,5,7,9-pentanitro-1,3,5,7,9-pentaazacyclodecane)] were reported. The relationships between the Arrhenius parameters (Ea and log A) from low-temp. thermolysis and the .delta. values of the nitro groups were specified. The .delta. values corresponded to nitro groups in nitramino groups which were the first to react. Based on these relationships, the Ea and log A values were predicted for 13 compds. from these nitramines, the parameters of homolytic thermolysis were differentiated from those of bimol. or another heterolytic thermal decompn., and some aspects of the thermolysis of nitramines, esp. those with geometrical constraints and/or with strongly-withdrawing groups, were interpreted. An evaluation of the effect of solid-liq. phase transition on the kinetics of the initial stage of HMX thermolysis was also made.

ACCESSION NUMBER: 1999:607700 CAPLUS
DOCUMENT NUMBER: 131:201883
TITLE: Analysis and prediction of the Arrhenius parameters of low-temperature thermolysis of nitramines by means of the 15N NMR spectroscopy
AUTHOR(S): Zeman, Svatopluk
CORPORATE SOURCE: Department of Theory and Technology of Explosives, University of Pardubice, Pardubice, CZ-532 10, Czech Rep.
SOURCE: Thermochimica Acta (1999), 333(2), 121-129
CODEN: THACAS; ISSN: 0040-6031
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 57 THERE ARE 57 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 170 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The invention relates to a method of producing org. dinitramide salts, for instance, guanidine dinitramide and guanylurea dinitramide starting from ammonium dinitramide (ADN). A concd. aq. soln. of ADN is reacted with a concd. aq. soln. of an org. salt, whose anion is OH- or CO32- which is capable of taking up a proton from the ammonium ion of ADN and transferring said ion to ammonia. The formed byproducts, i.e. ammonia and possibly carbonic acid, are driven off from the soln., as well as a certain amt. of water to maintain a concd. soln. The org. dinitramide salt is then pptd., for instance by cooling the soln. The method can be carried out as a continuous or semicontinuous process in a reactor, to which concd. aq. solns. of ADN and org. salt, resp., are supplied in equimol. amts. The soln. is transferred from the reactor to a pptn. tank where org. dinitramide salt is pptd. and a supernatant is recirculated to the reactor.

ACCESSION NUMBER: 1999:595083 CAPLUS
DOCUMENT NUMBER: 131:216198
TITLE: Manufacture of dinitramide salts for propellants
INVENTOR(S): Latypov, Nikolai; Langlet, Abraham
PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
SOURCE: PCT Int. Appl., 10 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9946202	A1	19990916	WO 1999-SE308	19990303
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
SE 9800770	A	19990911	SE 1998-770	19980310
SE 511675	C2	19991108		
AU 9927566	A1	19990927	AU 1999-27566	19990303

PRIORITY APPLN. INFO.: SE 1998-770 19980310
WO 1999-SE308 19990303
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 171 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Complexes of nickel(II), cobalt(III), copper(II), zinc(II), and cadmium(II) with ethylenediamine contg. dinitramide anion were synthesized and formulated as [M(en)3][N(NO)2]. The compds. were studied by magnetic susceptibility measurements, electronic spectroscopy, and DTA.

ACCESSION NUMBER: 1999:509069 CAPLUS
DOCUMENT NUMBER: 131:222562
TITLE: Metal complexes containing ethylenediamine and dinitramide anion
AUTHOR(S): Varand, V. L.; Larionov, S. V.; Kundo, N. N.
CORPORATE SOURCE: Institute of Inorganic Chemistry, Siberian Division, Russian Academy of Sciences, Novosibirsk, Russia
SOURCE: Russian Journal of General Chemistry (Translation of Zhurnal Obshchei Khimii) (1999), 69(2), 263-264
CODEN: RJGCEK; ISSN: 1070-3632
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 172 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A new method for the estn. and prediction of enthalpies of formation was developed for high-energy salts (nitrates, perchlorates, chlorides, and nitramides) based on the authors' exptl. database and quant. structure-property relationships (QSPR). The calcd. values for the enthalpies were in good agreement with exptl. data.

ACCESSION NUMBER: 1999:454915 CAPLUS
DOCUMENT NUMBER: 131:121524
TITLE: The enthalpy of formation study of nitrate and perchlorate salts
AUTHOR(S): Kostikova, Larisa; Matyushin, Yurii; Palyulin, Vladimir; Pivina, Tatyana
CORPORATE SOURCE: Semenov Institute Chemical Physics, Moscow, Russia
SOURCE: International Annual Conference of ICT (1999), 30th, 76/1-76/7
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 173 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Pure ADN and ADN/ paraffin mixt. were investigated as strands in an optical bomb at pressures from 0.5-10 Mpa. The burning rate was detd. by a video system and a special frame anal. The anal. of emission spectra in the UV/VIS allowed the detn. of rotational temp. the detn. of the particle temp., and the identification of transient flame radicals. The vibrational temps. of final combustion products resulted from band spectra emitted in the near and mid IR spectral range. Burning rates of 5-70 mm/s were recorded showing a mesa/ plateau effect at 4-7 Mpa. The UV/VIS spectra indicated an emission of OH, NH, and CN radicals. The strong emission of OH bands of the ADN/paraffin-mixt. allowed the investigation of rotational temps. with mean value of 2700 K which is closely below the adiabatic flame temp. of 2950 K. One-dimensional intensity profiles of the flame radicals were measured. As combustion end product H2O, CO, CO2, and NO were found. The measured emission profiles of flame species and temps. are qual. discussed on the basis of simulations.

ACCESSION NUMBER: 1999:454860 CAPLUS
DOCUMENT NUMBER: 131:104194
TITLE: Burning mechanisms of new energetic compounds
AUTHOR(S): Kelzenberg, S.; Weiser, V.; Eisenreich, N.; Baier, A.; Eckl, W.
CORPORATE SOURCE: Fraunhofer-Institut Chemische Technologie, Pfinztal, D-76327, Germany
SOURCE: International Annual Conference of ICT (1999), 30th, 14/1-14/12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 174 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Plane-wave ab initio calcns. based on d. functional theory and the pseudopotential method were used to study the structural properties of cryst. ammonium dinitramide (ADN). The optimization of the crystal structure was done with full relaxation of at. positions and lattice parameters under P21/c symmetry. The calcns. were performed using periodic boundary conditions in all three directions. The predicted crystal structure is in good agreement with x-ray data and indicates no internal symmetry for the dinitramide ion, in contradistinction to the gas phase theor. results. The two halves of the dinitramine ion are twisted with respect to each other while the NO2 groups are rotated out of the N-N-N plane. The authors have developed an intermol. potential that describes the structure of the ADN crystal in the approxn. of rigid ions. This potential is composed of pairwise Lennard-Jones, H-bonding terms, and Coulombic interactions. Crystal-packing calcns. without symmetry constraints performed with the potential reproduce accurately the main crystallog. features and yield very good agreement with the estd. lattice energy. This potential was further tested in isothermal-isobaric mol. dynamics simulations at atm. pressure and in the temp. range 4.2-350 K. The main temp. effect is an increase in rotational disorder of the ammonium ions, without any significant change of the translational order of the ions. The thermal expansion coeffs. calcd. for the model indicate anisotropic behavior.

ACCESSION NUMBER: 1999:444863 CAPLUS
DOCUMENT NUMBER: 131:207162
TITLE: Classical and Quantum Mechanical Studies of Crystalline Ammonium Dinitramide
AUTHOR(S): Sorescu, Dan C.; Thompson, Donald L.
CORPORATE SOURCE: Department of Chemistry, Oklahoma State University, Stillwater, OK, 74078, USA
SOURCE: Journal of Physical Chemistry B (1999), 103(32), 6774-6782
CODEN: JPCBFK; ISSN: 1089-5647
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 175 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB DNAZ (3,3-dinitroazetidine) readily undergoes nucleophilic addn. reactions with electron deficient haloaroms., cyanogen bromide, S-methyl-N-nitroisothiourea and dichloroglyoxime to afford novel, energetic 1-substituted 3,3-dinitroazetidines. N-Nitrosation of DNAZ readily occurs, and Mannich condensations of DNAZ with polynitro alcs. are also described. The synthesis and properties of the energetic materials derived from these reactions are discussed.

ACCESSION NUMBER: 1999:411860 CAPLUS
DOCUMENT NUMBER: 131:144472
TITLE: Preparation of 1-substituted 3,3-dinitroazetidines
AUTHOR(S): Hiskey, Michael A.; Johnson, M. Catherine; Chavez, David E.
CORPORATE SOURCE: Los Alamos National Laboratory, Los Alamos, NM, 87545, USA
SOURCE: Journal of Energetic Materials (1999), 17(2 & 3), 233-252
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 176 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The kinetics of nitration of N-nitro-.beta.-aminopropionitrile to the corresponding N,N-dinitro deriv. with nitronium salts in alkyl acetates and acetonitrile were studied. The reaction proceeds in the kinetic region and is of first order with respect to the substrate. The kinetic isotope effect in the nitration with nitronium tetrafluoroborate is 1.85, and in the nitration with nitronium hexafluorosilicate, 1.52. The rate-detg. stage is proton abstraction from the NH group.

ACCESSION NUMBER: 1999:398879 CAPLUS
DOCUMENT NUMBER: 131:157532
TITLE: Nitration by nitronium salts: VII. Kinetics of nitration of N-nitro-.beta.-aminopropionitrile
AUTHOR(S): Guk, Yu. V.; Golod, E. L.; Gidaspov, B. V.
CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, 198013, Russia
SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (1998), 34(10), 1423-1425
CODEN: RJOCEQ; ISSN: 1070-4280
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 177 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Compds. which inhibit the microtubule system of plants are useful for combating protozoan diseases of the neuromuscular system caused by Neospora. These compds. include herbicides such as 2,6-dinitroanilines and N-aryl carbamates. Thus, benfluralin and dinitramide were completely cytotoxic to N. caninum in cell culture at 10-6 and 10-7 g/mL, resp.

ACCESSION NUMBER: 1999:375397 CAPLUS
DOCUMENT NUMBER: 131:29747
TITLE: Agents for combating Neospora species
INVENTOR(S): Greif, Gisela; Lieb, Folker; Fedtke, Carl
PATENT ASSIGNEE(S): Bayer Aktiengesellschaft, Germany
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9927923	A1	19990610	WO 1998-EP7460	19981120
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
DE 19753504	A1	19990610	DE 1997-19753504	19971203
CA 2312396	AA	19990610	CA 1998-2312396	19981120
AU 9917561	A1	19990616	AU 1999-17561	19981120
AU 748466	B2	20020606		
EP 1033982	A1	20000913	EP 1998-962368	19981120
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL				
BR 9815126	A	20001107	BR 1998-15126	19981120
JP 2001524518	T2	20011204	JP 2000-522909	19981120
NZ 504878	A	20021025	NZ 1998-504878	19981120
US 2003100481	A1	20030529	US 2002-307721	20021202

PRIORITY APPLN. INFO.: DE 1997-19753504 A 19971203
WO 1998-EP7460 W 19981120
US 2000-555560 B1 20000531

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 178 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The title salts have been prepd. and structurally characterized from room temp. x-ray single crystal diffraction data. The crystal structures of both salts show distinct monoprotonated melaminium cations and dinitramide or nitrate anions. Efficient packing in the solid state is achieved by extensive hydrogen bonding between two-dimensional zigzag ribbons of the melaminium cations and the anions, resulting in high densities of the solid state structures of 1.74 for the dinitramide and 1.71 g/cm3 for the nitrate.

ACCESSION NUMBER: 1999:368359 CAPLUS
DOCUMENT NUMBER: 131:129972
TITLE: Energetic materials: the preparation and structural characterization of melaminium dinitramide and melaminium nitrate
AUTHOR(S): Tanbug, Rasim; Kirschbaum, Kristin; Pinkerton, A. Alan
CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo, OH, 43606, USA
SOURCE: Journal of Chemical Crystallography (1999), 29(1), 45-55
CODEN: JCCYEV; ISSN: 1074-1542
PUBLISHER: Kluwer Academic/Plenum Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 95 THERE ARE 95 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 179 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal decompn. of ammonium dinitramide proceeds via homolytic rupture of the N-NO2 bond and partially by the proton transfer reaction. The monomol. decay of the anion to N2O and NO3- in the solid state at 60.degree. occurs with higher rates than those in the melt. This is related to a change in the reactivity of the anion due to the violation of its symmetry on going to the solid state. The absence of hydrogen bonds between the anion and cations or water mols. is an addnl. condition for the fast decay.

ACCESSION NUMBER: 1999:347521 CAPLUS
DOCUMENT NUMBER: 131:89812
TITLE: Thermal decomposition of ammonium dinitramide and mechanism of anomalous decay of dinitramide salts
AUTHOR(S): Pavlov, A. N.; Grebennikov, V. N.; Nazina, L. D.; Nazin, G. M.; Manelis, G. B.
CORPORATE SOURCE: Institute for Chemical Physics Research, Russian Academy of Sciences, Chernogolovka, 142432, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1999), 48(1), 50-54
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 180 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The invention relates to a method for producing ADN prills. The method comprises melting and dispersion of ADN in a nonpolar medium to obtain droplets of ADN in the medium; cooling the medium for solidification of the droplets into prills and sepn. of the prills from the medium. Ultrasonic energy is supplied to the medium during dispersion. The invention also concerns a polymodal mixt. of ADN prills contg. prills having a particle size of <40 .mu.m produced according to the method.

ACCESSION NUMBER: 1999:297372 CAPLUS
DOCUMENT NUMBER: 130:313992
TITLE: Method of producing ammonium dinitramide (ADN) prills
INVENTOR(S): Langlet, Abraham; Johansson, Martin
PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
SOURCE: PCT Int. Appl., 9 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9921795	A1	19990506	WO 1998-SE1938	19981027
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
SE 9703928	A	19990429	SE 1997-3928	19971028
SE 512396	C2	20000313		
AU 9897717	A1	19990517	AU 1998-97717	19981027

PRIORITY APPLN. INFO.: SE 1997-3928 19971028
WO 1998-SE1938 19981027

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 181 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The invention relates to a method of producing prills of ADN intended to be mixed with a polymer system. The method comprises melting and dispersion of ADN in a nonpolar medium to obtain droplets of ADN in the medium; cooling of the medium to solidify the droplets into prills, and sepn. of the prills from the medium. The nonpolar medium essentially consists of a plasticizer which is compatible with the polymer system. The nonpolar system may also contain a polymer, such as HTPB, for adjusting the viscosity of the medium.

ACCESSION NUMBER: 1999:297471 CAPLUS
DOCUMENT NUMBER: 130:313990
TITLE: Method of producing ammonium dinitramide (ADN) prills suitable for use in a polymer system
INVENTOR(S): Langlet, Abraham; Johansson, Martin
PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
SOURCE: PCT Int. Appl., 8 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9921794	A1	19990506	WO 1998-SE1937	19981027
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
SE 9703928	A	19990429	SE 1997-3928	19971028
SE 512396	C2	20000313		
AU 9897716	A1	19990517	AU 1998-97716	19981027
PRIORITY APPLN. INFO.:			SE 1997-3928	19971028
			WO 1998-SE1937	19981027

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 182 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The invention relates to the prodn. of prills of ADN. Homogeneous, pore-free prills are produced by making droplets of ADN solidify at low pressure, preferably under vacuum below 25 torr. The prilling can be carried out in a prill tower or in a liq. nonpolar medium. The nonpolar medium may consist of a plasticizer or a plasticizer with a polymer added for adjustment of the viscosity of the medium. Ultrasonic energy can be supplied to the medium during prilling to obtain an intense dispersion of molten ADN in the medium and, thus, small prills. ADN prills having a particle size below 40 .mu.m can be produced in this way. The invention also concerns a polymodal mixt. of ADN prills comprising prills having a particle size below 40 .mu.m produced according to the method.

ACCESSION NUMBER: 1999:297370 CAPLUS
DOCUMENT NUMBER: 130:313990
TITLE: Method of producing prills of ammonium dinitramide (ADN)
INVENTOR(S): Langlet, Abraham; Johansson, Martin
PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
SOURCE: PCT Int. Appl., 15 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9921793	A1	19990506	WO 1998-SE1936	19981027
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
SE 9703928	A	19990429	SE 1997-3928	19971028
SE 512396	C2	20000313		
AU 9897715	A1	19990517	AU 1998-97715	19981027
PRIORITY APPLN. INFO.:			SE 1997-3928	19971028
			WO 1998-SE1936	19981027

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 183 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal decompn. of ammonium dinitramide, NH4N(NO2)2 (ADN), in the gas phase has been studied at 373-920 K by pyrolysis/mass spectrometry under low-pressure conditions using a Saalfeld reactor. The reaction of the sublimed mixt. of NH3 and HN(NO2)2 (dinitraminic acid, DN) was found to be initiated by the unimol. decompn. of DN, HN(NO2)2 .fwdarw. HNNO2 + NO2, followed by the rapid decompn. reaction, HNNO2 + M .fwdarw. N2O + OH + M. The measured abs. yields of NH3, H2O, N2, and N2O, calibrated with std. mixts., could be satisfactorily modeled at 10 Torr He carrier gas pressure by employing the theor. computed values of k2 = 6.79 .times. 1048 T-11.0 exp(-21780/T) s-1 and k3 = 7.53 .times. 1024 T-2.9 exp(-12958/T) cm3/(mol s) by high-level ab initio MO and canonical variational Rice-Ramsperger-Kassel-Marcus (MO/cVRRKM) calcns. The key reactions with recommended rate consts. are presented.

ACCESSION NUMBER: 1999:285202 CAPLUS
DOCUMENT NUMBER: 130:287602
TITLE: Thermal decomposition of gaseous ammonium dinitramide at low pressure: kinetic modeling of product formation with ab initio MO/cVRRKM calculations
AUTHOR(S): Park, J.; Chakraborty, D.; Lin, M. C.
CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
SOURCE: Symposium (International) on Combustion, [Proceedings] (1998), 27th(Vol. 2), 2351-2357
CODEN: SYMCAQ; ISSN: 0082-0784
PUBLISHER: Combustion Institute
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 184 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

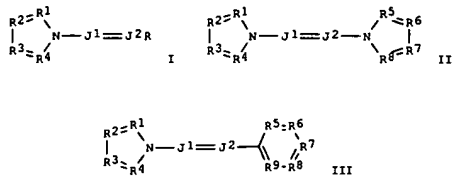
AB Coating of thin films onto solid particle was achieved by in-situ simultaneous nucleation and deposition of dissolved material out of a supercrit. fluid, film formation, and subsequent thermal conditioning of the coating on the particles. The coating method involves an enclosed system that provides (1) for suspension of the solid particles to be coated; (2) for dissoln. of the coating material in the supercrit. fluid solvent; (3) for temp. or pressure swing operations causing film deposition/coating of the suspended solid particles and; (4) addnl. chem. addn. and/or thermal cycles providing for any addnl. reactions required (such as polymn.). Thus, CO2 supercrit. fluid contg. MDI and hydroxy-terminal polybutadiene was used to coated either ammonium nitrate particles or NaCl.

ACCESSION NUMBER: 1999:262202 CAPLUS
DOCUMENT NUMBER: 130:298010
TITLE: Supercritical fluid aided coating of particulate material
INVENTOR(S): Sunol, Aydin K.
PATENT ASSIGNEE(S): University of South Florida, USA
SOURCE: PCT Int. Appl., 19 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9919085	A1	19990422	WO 1998-US21751	19981015
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2306215	AA	19990422	CA 1998-2306215	19981015
AU 9919952	A1	19990503	AU 1999-19952	19981015
EP 1028820	A1	20000823	EP 1998-964682	19981015
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
US 6426116	B1	20020730	US 2000-529568	20001026
PRIORITY APPLN. INFO.:			US 1997-62332P P	19971015
			WO 1998-US21751 W	19981015

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 185 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
GI



AB Novel energetic compds., comprising N,N'-azobis-nitroazoles or analogs, are esp. useful as gas generators for inflating automobile or aircraft occupant restraint devices (e.g., airbags), can also be useful in solid propellants and primary explosives, such as detonators, blasting caps, etc. The compds. are of general structures I [R is a monocyclic nitrogen-contg. heterocycle or bicyclic arom. substituent; R1-4 are N, N.fwdarw.O, (N+Ra)Z-, CH, C-Rb, CNRcRd, and C-NO2; Ra, Rb are C1-24-alkyl, F; Rc, Rd = H, C1-24-alkyl; Z- is a counterion; J1, J2 are N or N.fwdarw.O], II (R5-8 is selected from the same components as R1-4), III (R9 is chosen from the same components as R1-8). Similar structures were also reported: (1) which are similar to III, in which the six-membered ring is replaced by an azulene-type bicyclic system, and (2) which are similar to II, in which a third five-membered ring is joined to one of the five-membered rings by an azo or azoxy linkage. Preferred compds. are 1,1'-azobis(3-nitro-1,2,4-triazole) and 1,1'-azobis(3,5-dinitro-1,2,4-triazole).

ACCESSION NUMBER: 1999:212820 CAPLUS
DOCUMENT NUMBER: 130:239630
TITLE: N,N'-Azobisnitroazoles and analogs as detonators and inflators for occupant restraint devices and airbags
INVENTOR(S): Bottaro, Jeffrey C.; Schmitt, Robert J.; Penwell, Paul E.
PATENT ASSIGNEE(S): SRI International, USA
SOURCE: U.S., 8 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5889161	A	19990330	US 1998-78302	19980513
US 6156136	A	20001205	US 1998-220098	19981222
WO 9958506	A1	19991118	WO 1999-US10395	19990511

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,

L4 ANSWER 185 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN (Continued)
TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

AU 9940752	A1	19991129	AU 1999-40752 19990511
EP 1077951	A1	20010228	EP 1999-924191 19990511

R: DE, FR, GB, IT, NL

PRIORITY APPLN. INFO.: US 1998-78302 A3 19980513
WO 1999-US10395 W 19990511
OTHER SOURCE(S): MARPAT 130:239630
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 186 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A thermal study of the dinitramide salts of lithium, sodium, potassium, rubidium and cesium is presented. The series displayed a complex set of DSC (differential scanning calorimetry) exothermic decays with the exception of the lithium salt which showed two simple exothermic decompn. reactions. All five salts thermally decompd. to the equiv. nitrate salt as evidenced by DSC melting endotherms and TGA (thermogravimetric anal.) stoichiometric mass losses. Phys. changes due to thermal heating were followed by hot stage microscopy. Thermal decay was accompanied by gas evolution.

ACCESSION NUMBER: 1999:171385 CAPLUS
DOCUMENT NUMBER: 130:269345
TITLE: Thermal characteristics of alkali metal dinitramide salts
AUTHOR(S): Cliff, Matthew D.; Smith, Matthew W.
CORPORATE SOURCE: Aeronautical and Maritime Research Laboratory (AMRL)-DSTO, Salisbury, 5108, Australia
SOURCE: Journal of Energetic Materials (1999), 17(1), 69-86
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 187 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Using a fairly simple technique and small samples it was possible to det. the thermal diffusivity, sp. heat capacity, and thermal cond., all as a function of sample temp., for a variety of components of solid rocket propellants. The oxidizers AP, ADN, CL20, HMX, RDX, HNF, TNAZ were examd. as well as the nonenergetic polymers Teflon, HTPB, and polyurethane, energetic binders contg. GAP and BAMO and/or NMMO, and actual solid propellants XM39, N5, N12, and SB129.

ACCESSION NUMBER: 1999:171383 CAPLUS
DOCUMENT NUMBER: 130:284211
TITLE: Thermal properties measurements of solid rocket propellant oxidizers and binder materials as a function of temperature
AUTHOR(S): Hanson-Parr, Donna M.; Parr, Timothy P.
CORPORATE SOURCE: Naval Air Warfare Center Weapons Division, China Lake, CA, 93555-6100, USA
SOURCE: Journal of Energetic Materials (1999), 17(1), 1-48
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 188 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The crystal structures of two hexammonium polymorphs, 1 and 2, and the ethane-1,2-diammonium, 3, salts of dinitramide were detd. 1 Crystallizes in the triclinic space group P.hivin.1 with a 6.391(2), b 7.5826(9), c 10.828(1) .ANG., .alpha. 77.58(1), .beta. 88.18(2), .gamma. 87.54(2).degree., 2 crystallizes in the monoclinic space group P21/c with a 6.4893(3), b 14.5149(8), c 10.6557(4) .ANG., .beta. 94.300(4).degree., and 3 crystallizes in the triclinic space group P.hivin.1 with a 5.614(1), b 6.867(2), c 7.371(2) .ANG., .alpha. 68.89(2), .beta. 89.00(2), .gamma. 78.90(2).degree.. At. coordinates and R's are given. The three structures all contain protonated amine cations which are involved in H bonding interactions with dinitramide anions.

ACCESSION NUMBER: 1999:158908 CAPLUS
DOCUMENT NUMBER: 130:274347
TITLE: A new class of flexible energetic salts. Part 5. The structures of two hexammonium polymorphs and the ethane-1,2-diammonium salts of dinitramide
AUTHOR(S): Gilardi, R. D.; Butcher, Ray J.
CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research Laboratory, Washington, DC, 20375, USA
SOURCE: Journal of Chemical Crystallography (1998), 28(9), 673-681
CODEN: JCCYEV; ISSN: 1074-1542
PUBLISHER: Plenum Publishing Corp.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 189 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermodn. anal. is carried out of mixts. of solid rocket propellants that contain beryllium or beryllium hydride as energetic component with various oxidizers and polymeric fuel binders. The comparative anal. is carried out of ballistic efficiency of the compns. that contain aluminum and without energetic component during the calcn. of d. and loss due to two-phase product combustion.

ACCESSION NUMBER: 1999:107946 CAPLUS
DOCUMENT NUMBER: 130:239594
TITLE: Analysis of energetic possibilities of composite solid rocket propellants using beryllium and beryllium hydride as the energetic component
AUTHOR(S): Nechiporenko, G. N.; Lempert, D. B.
CORPORATE SOURCE: Inst. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia
SOURCE: Khimicheskaya Fizika (1998), 17(10), 93-106
CODEN: KHFID9; ISSN: 0207-401X
PUBLISHER: Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 190 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Vibrational spectra of several nitramines in the long-wave region (50-450 cm-1) were studied. The frequencies of intra- and intermol. vibrations were sepd. and a tentative assignment of the frequencies of self-associative complexes was performed.

ACCESSION NUMBER: 1999:101717 CAPLUS
DOCUMENT NUMBER: 130:229305
TITLE: Far IR and Raman vibrational spectra of nitramines
AUTHOR(S): Shlyapochnikov, V. A.; Khaikin, L. S.; Grikina, E.; Cherskaya, N. O.; Maksimova, L. E.; Pyatakov, N. F.
CORPORATE SOURCE: N. D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, 117913, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1998), 47(11), 2173-2176
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 191 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The burning rate of ammonium dinitramide (ADN) has been studied as a function of pressure and different additives, the temps. in the combustion front, and the compn. of combustion products. Some kinetic characteristics of decompn. have been also obtained. A combustion model has been used that accounts for decompn. and evapn., and calcd. parameters of combustion are compared with exptl. data. The mechanism of ADN combustion is similar to that of many other onium salts. Its peculiarities are conditioned by a rather high decompn. rate in the liq. state, low reactivity of decompn. products, and formation of ammonium nitrate as an intermediate product at low pressures.

ACCESSION NUMBER: 1999:101698 CAPLUS
DOCUMENT NUMBER: 130:126966
TITLE: Combustion of ammonium dinitramide
AUTHOR(S): Strunin, V. A.; D'Yakov, A. P.; Manelis, G. B.
CORPORATE SOURCE: Institute of Chemical Physics, Russian Academy of Sciences, Chernogolovka, Moscow Region, 142432, Russia
SOURCE: Combustion and Flame (1999), 117(1/2), 429-434
CODEN: CBFMAO; ISSN: 0010-2180
PUBLISHER: Elsevier Science Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 192 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Predicting the rates of photolysis of org. compds. in natural waters is limited by several factors. For direct photolysis of dil. solns. of org. compds. in surface waters, the product of the quantum yield (efficiency) and light absorption rate are needed, but can rarely be calcd. from structure activity relations (SARs); direct kinetic consts. can be estd. reliably using measured quantum yields and solar models or simple spread sheet databases to calc. rates as a function of latitude and season. Indirect photoreaction consts. can be calcd. from measured or estd. rate consts. and the av. transient photooxidant concn. SARs for photooxidant rate consts. are available for some classes of compds. The overall indirect photolysis rate for a specific compd. is the sum of all significant oxidn. reactions for the compd. Quantitation of the rate process requires that a reaction profile be developed for each compd.

ACCESSION NUMBER: 1999:90842 CAPLUS
DOCUMENT NUMBER: 130:213290
TITLE: Predicting photoreaction rates in surface waters
AUTHOR(S): Mill, Theodore
CORPORATE SOURCE: Chem. Lab., SRI Int., Menlo Park, CA, 94025, USA
SOURCE: Chemosphere (1999), 38(6), 1379-1390
CODEN: CMSHAF; ISSN: 0045-6535
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 193 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Kinetic consts. of thermal decompn. were detd. for ADN and prilled ADN by DSC and TG. Pressurized DSC at 550 psi air or helium had similar kinetic consts. for prilled ADN, namely 29 kcal/mol activation energy and a log frequency factor of .apprx.14.0 min-1. These values were similar to those found in sealed sample pans in which the decompn. gases were confined. DSC and TG runs in open sample pans in N2 or HE had higher activation energies and frequency factors (i.e., 40-43 kcal/mol and 18-20 min-1, resp.). Thus, it appears that confinement of the ADN decompn. gases either under pressurization or a sealed environment accelerates the decompn. of prilled ADN. Kinetics of decompn. of unprilled ADN at atm. pressure in N2 or He by DSC and TG were Ea = 37 kcal/mol and log A= 17 min-1. Unprilled ADN had lower activation energies and frequency factors for decompn. than prilled ADN that contained stabilizers. The effect of sample containment (i.e. aluminum, coated aluminum, gold, and glass ampoules) on the shape of the DSC curve of ADN was investigated. Isothermal vacuum TG of ADN at 45-75.degree. and the DSC anal. of the TG residues showed unusual results at 60.degree.. The rate and enthalpy of decompn. of four dinitramide salts and their dielec. relaxation were related to the basicity of the cation.

ACCESSION NUMBER: 1999:80572 CAPLUS
DOCUMENT NUMBER: 130:211450
TITLE: Thermal analysis of ammonium dinitramide (ADN)
AUTHOR(S): Tompa, Albert S.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: CPIA Publication (1998), 674(Vol. 1, 1998 JANNAF Propellant Development & Characterization Subcommittee and Safety & Environmental Protection Subcommittee Joint Meeting, Vol. 1), 215-248
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 194 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Liq. carbon dioxide (L-CO2) was used to replace methylene chloride as the solvent in nitrations with dinitrogen pentoxide (N2O5) and anhyd. nitric acid. This new L-CO2 nitration procedures overcame many of the drawbacks of conventional mixed acid (HNO3/H2SO4) media when dealing with sensitive substrates. Both N2O5 and anhyd. nitric acid are sol. in L-CO2, which is a major advantage because they can be added directly into the substrate being nitrated. The N2O5 was dissolved in L-CO2, cooled, and added to L-CO2 contg. the materials to be nitrated. NSWC's Green Chem. program requires prepn. of energetic materials contg. C-nitro, N-nitro, and O-nitro moieties using L-CO2 as the processing solvent.

ACCESSION NUMBER: 1999:80555 CAPLUS
DOCUMENT NUMBER: 130:211420
TITLE: Nitrations with N2O5 and anhydrous HNO3 in liquid carbon dioxide
AUTHOR(S): Naufflett, G. W.; Farncomb, R. E.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: CPIA Publication (1998), 674(Vol. 1, 1998 JANNAF Propellant Development & Characterization Subcommittee and Safety & Environmental Protection Subcommittee Joint Meeting, Vol. 1), 11-23
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 195 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ammonium dinitramide (ADN) is a class 1.1 oxidizer that may be used in rocket propellants and explosives. Previous studies have shown that ADN is a female reproductive toxicant, causing implantation failure in Sprague-Dawley rats when it is administered during the preimplantation period of gestation. The purpose of this follow-up study was to identify the mechanism(s) assocd. with implantation failure following exposure to ADN. Mated female rats were treated with 2.0 g per L (g L-1) ADN in their drinking water for 24, 48, 72, or 96 h before preimplantation embryos were harvested from the oviducts or uterine horns. On gestation day 1 (GD-1), comparable nos. of morphol. normal two-cell embryos were harvested from the oviducts of the treatment and control groups. On GD-2, the development of the embryos harvested from the treated animals was either slowed or halted when compared to the control embryos. By GD-4, 98% of the embryos harvested from the control group had developed to the morula or blastocyst stage; these were collected from the uterine horns. On GD-4 in the treated group, 41% of the harvested embryos remained at the two- to six-cell stage and 59% were degenerate; 82% of these embryos were collected from the oviducts. These data suggest that the implantation failure seen in animals treated with ADN is due to embryolethality.

ACCESSION NUMBER: 1999:68619 CAPLUS
DOCUMENT NUMBER: 130:248008
TITLE: Effects of ammonium dinitramide on preimplantation embryos in Sprague-Dawley rats
AUTHOR(S): Graeter, Linda J.; Wolfe, Robin E.; Kinkead, Edwin R.; Flemming, Carlyle D.
CORPORATE SOURCE: Toxicology Division Armstrong Laboratory, ManTech Environmental Technology, Wright-Patterson Air Force Base, OH, USA
SOURCE: Toxicology and Industrial Health (1998), 14(6), 789-798
CODEN: TIHEEC; ISSN: 0748-2337
PUBLISHER: Stockton Press
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L4 ANSWER 196 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Process for producing ammonium dinitramide (ADN) prills comprises introducing solid particulate ADN along with one or more thermal stabilizers into the top of a melting column, allowed to melt to form pre-prills while passing through a hot-zone ("heated zone") in the prilling column, and allowing the pre-prills to form spheres in the presence of an upwardly blown inert medium which is countercurrent to the path of the ADN in the prilling column,. The flow is designed not to blow the ADN out of the prilling column. The rate of prill formation can, if desired, be accelerated by providing addnl. cooling, such as refrigeration, to the cooling zone in the prilling column. The ADN prills are suitable for use in propellants.

ACCESSION NUMBER: 1999:48687 CAPLUS
DOCUMENT NUMBER: 130:83727
TITLE: Manufacture of thermally-stabilized prilled ammonium dinitramide particles
INVENTOR(S): Highsmith, Thomas K.; McLeod, Corey S.; Wardle, Robert B.; Hendrickson, Roger
PATENT ASSIGNEE(S): Thiokol Corporation, USA
SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9901408	A1	19990114	WO 1998-US13583	19980702
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9883788	A1	19990125	AU 1998-83788	19980702
EP 994829	A1	20000426	EP 1998-934209	19980702
R: DE, FR, SE				

PRIORITY APPLN. INFO.: US 1997-51567P P 19970702
WO 1998-US13583 W 19980702
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS FORMAT
RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 197 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Guanylurea dinitramide (I), of general formula H2NC(:NH)NHC(:O)NH2.HN(NO2)2, can be used as an explosive, a propellant (esp. for solid rocket motors), and as a gas generator for vehicle safety equipment (e.g., an automobile airbag). I is easily prepd. by pptn. of guanylurea sulfate with nitronitramide [HN(NO2)2]. Propellants and explosives contg. I are also claimed.

ACCESSION NUMBER: 1998:806617 CAPLUS
DOCUMENT NUMBER: 130:54478
TITLE: Propellants, explosives, and airbag inflators containing guanylurea dinitramide
INVENTOR(S): Langlet, Abraham
PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
SOURCE: PCT Int. Appl., 12 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9855428	A1	19981210	WO 1998-SE949	19980520
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
SE 9701897	A	19981122	SE 1997-1897	19970521
SE 509312	C2	19990111		
AU 9875616	A1	19981221	AU 1998-75616	19980520
EP 1007496	A1	20000614	EP 1998-923290	19980520
EP 1007496	B1	20021002		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, PT, IE, FI				
JP 2001527575	T2	20011225	JP 1998-550780	19980520
AT 225328	E	20021015	AT 1998-923290	19980520
ES 2182310	T3	20030301	ES 1998-923290	19980520
US 2001007913	A1	20010712	US 1999-423636	19991117
US 6291711	B2	20010918		

PRIORITY APPLN. INFO.: SE 1997-1897 A 19970521
WO 1998-SE949 W 19980520
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS FORMAT
RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 198 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The methods for the study of flame structure and kinetics of the thermal decompn. of solid propellant by probing mass spectrometry are described. The developed methods were applied to the study of ammonium dinitramide (ADN) combustion chem. The study has shown that along with ADN decompn., sublimation takes place to give gaseous ADN followed by dissocn. to yielding ammonia and dinitraminic acid (HD). Gaseous ADN has been obsd. in ADN decompn. products. The structure of ADN combustion zones at 1-6 atm was studied using a mol.-beam mass-spectrometry as well as a microthermocouple technique. Three combustion zones have been obsd. Gaseous ADN has been discovered in the first cool flame zone at 3 atm. Gaseous ADN dissocn. on NH3 and HD followed by HD decompn. in the near-surface zone are key reactions resulting in a temp. rise of about 150 K. The second high-temp. zone is found within 6-8 mm from the ADN burning surface at 6 atm. The main reaction in this zone is ammonia oxidn. by nitric acid and the combustion temp. is 1400 K. The third zone was obsd. at 40 atm, the measured final temp. was .apprx.2000 K. The obtained data form the basis for the development of a chem. mechanism of reactions in both the ADN flame and combustion model.

ACCESSION NUMBER: 1998:787893 CAPLUS
DOCUMENT NUMBER: 130:97703
TITLE: Molecular-beam mass-spectrometry to ammonium dinitramide combustion chemistry studies
AUTHOR(S): Korobeinichev, Oleg P.; Kuibida, Leonid V.; Paletsky, Alexander A.; Shmakov, Andrey G.
CORPORATE SOURCE: Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: Journal of Propulsion and Power (1998), 14(6), 991-1000
CODEN: JPPOEL; ISSN: 0748-4658
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS FORMAT
RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 199 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A correlation is derived for the dependence of specific pulse of the solid rocket fuel mixt. with hydrocarbon binder and oxidizer on the chem. compn. and enthalpy of oxidn. The compn. with and without addnl. fuel components (Al, Mg, Be, B) are considered. The efficiency of addn. of the fuel component decreases with an increase of the energy efficiency of binder-oxidizer mixt.

ACCESSION NUMBER: 1998:740149 CAPLUS
DOCUMENT NUMBER: 130:54460
TITLE: Dependence of the specific pulse of optimized mixtures of solid rocket fuels (Binder + metal + oxidizer) on properties of a metal and oxidizer
AUTHOR(S): Lempert, D. B.; Nichiporenko, G. N.; Doglanova, G. P.; Stesik, L. S.
CORPORATE SOURCE: Inst. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia
SOURCE: Khimicheskaya Fizika (1998), 17(8), 114-120
CODEN: KHFID9; ISSN: 0207-401X
PUBLISHER: Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 200 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The reaction of 3HN with NO producing H + N2O and N2 + OH was investigated with the variational RRKM (Rice-Ramsperger-Kassel-Marcus) theory using existing potential energy surface data. The bimol. const. for the loss of the reactants and those for the formation of N2O and N2 were calcd. and compared with exptl. results. The agreement between theory and expt. appeared to be satisfactory, although improvement in both areas of this important elementary reaction is desirable. The results have application in the combustion of nitramine propellants, esp. those contg. ammonium dinitramide.

ACCESSION NUMBER: 1998:738501 CAPLUS
DOCUMENT NUMBER: 130:54472
TITLE: Theoretical calculations for the kinetics of the HN+NO reaction
AUTHOR(S): Kristyan, S.; Lin, M. C.
CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
SOURCE: Chemical Physics Letters (1998), 297(3,4), 200-204
CODEN: CHPLBC; ISSN: 0009-2614
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 201 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A method for manufg. melt-cast explosive charges (e.g., shaped charges) consists of suspending and explosive component in molten ADN (ammonium dinitramide) as the matrix. The explosive components are selected from the group consisting of RDX, HMX, HNIW (CL-20), and powd. Al.

ACCESSION NUMBER: 1998:721658 CAPLUS
DOCUMENT NUMBER: 129:345108
TITLE: Preparation of melt-cast explosive charges using molten ammonium dinitramide matrix
INVENTOR(S): Langlet, Abraham; Ostmark, Henric
PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
SOURCE: PCT Int. Appl., 10 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9849123	A1	19981105	WO 1998-SE775	19980428
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
SE 9701622	A	19981030	SE 1997-1622	19970429
SE 511285	C2	19990906		
AU 9873547	A1	19981124	AU 1998-73547	19980428

PRIORITY APPLN. INFO.: SE 1997-1622 19970429
WO 1998-SE775 19980428
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 202 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB K dinitramide (KDN) was synthesized by decyanation reaction of N,N-dinitro-.beta.-aminopropionitrile, and the pure product was prepd. by recrystn. The structure of KDN was confirmed by elemental anal., IR, UV, and atom absorption spectrum, and the thermal behavior was detd. by DSC. The m.p. and d. of KDN were detd.

ACCESSION NUMBER: 1998:718475 CAPLUS
DOCUMENT NUMBER: 129:345076
TITLE: Synthesis and characterization of potassium dinitramide for propellants
AUTHOR(S): Lei, Ming; Zhang, Zhizhong; Zhu, Chunhua; Wang, Bozhou
CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xi'an, 710065, Peop. Rep. China
SOURCE: Huozhayao Xuebao (1998), 21(4), 9-10
CODEN: HUXUFP
PUBLISHER: Zhongguo Bingqi Gongye Di-204 Yanjiuso
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 203 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB An explosive comprising a complex between a dinitramide salt and an explosive selected from the group consisting of TNB (1,3,5-trinitrobenzene), HNIW (hexanitrohexaazawurtzitane) and TNAZ (1,3,3-trinitroazetidine). The dinitramide salt is of general formula M+n(-N(NO2)2)n, in which M is a metal cation or a nitrogen-contg. cation, and n = 1-3. The dinitramide salt is preferably ADN (ammonium dinitramide) or KDN (potassium dinitramide).

ACCESSION NUMBER: 1998:706188 CAPLUS
DOCUMENT NUMBER: 129:318332
TITLE: Composite explosives consisting of complexes of nitro compounds with dinitramide salts
INVENTOR(S): Langlet, Abraham; Johansson, Martin; Wingborg, Niklas; Ostmark, Henric
PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
SOURCE: PCT Int. Appl., 11 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9846545	A1	19981022	WO 1998-SE674	19980414
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
SE 9701394	A	19981016	SE 1997-1394	19970415
SE 511284	C2	19990906		
AU 9870931	A1	19981111	AU 1998-70931	19980414

PRIORITY APPLN. INFO.: SE 1997-1394 19970415
WO 1998-SE674 19980414
REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 204 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Unavailable
ACCESSION NUMBER: 1998:690736 CAPLUS
DOCUMENT NUMBER: 130:59294
TITLE: Toward a habit modification of ammonium dinitramide
AUTHOR(S): Nagao, Lee Mia
CORPORATE SOURCE: Yale Univ., New Haven, CT, USA
SOURCE: (1998) 313 pp. Avail.: UMI, Order No. DA9835251
From: Diss. Abstr. Int., B 1998, 59(5), 2207
DOCUMENT TYPE: Dissertation
LANGUAGE: English

L4 ANSWER 205 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Clinker-forming nonazide gas-generating compns., useful for inflating passenger restraint gas inflator bags, comprise a multimetallic coordination complex oxidizer selected from coordination complexes comprised of anionic nitro and nitrito ligands coordinated with a transitional metal template, and a cationic component comprised of two or more different metals. The gas-generating compns. generate relatively more gas and are significantly less toxic than known azide gas generating compns., and furthermore, generate solids that are readily filterable.
ACCESSION NUMBER: 1998:612057 CAPLUS
DOCUMENT NUMBER: 129:204880
TITLE: Gas-generating composition for inflating automobile airbag passive restraint system complex oxidizers with
multimetal cations
INVENTOR(S): Lundstrom, Norman H.
PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9839274	A1	19980911	WO 1998-US3868	19980226
W: CA, JP, KR				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5962808	A	19991005	US 1997-811694	19970305
EP 964842	A1	19991222	EP 1998-908768	19980226
R: GB				
JP 2001514611	T2	20010911	JP 1998-538605	19980226

PRIORITY APPLN. INFO.: US 1997-811694 A 19970305
WO 1998-US3868 W 19980226
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 206 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB High nitrogen gas-generating compns., useful in inflating passenger restraint gas inflator bags, comprise at least one metal ammine or metal hydrazine coordination complex in combination with at least one low impact
and low friction sensitivity high nitrogen fuel. The combination results in gas generating compns. that are relatively more stable and less sensitive, and generate relatively more gas and less solids than known gas-generating compns.
ACCESSION NUMBER: 1998:604883 CAPLUS
DOCUMENT NUMBER: 129:191215
TITLE: Gas generator propellant compositions for inflating of
airbags
INVENTOR(S): Lundstrom, Norman H.
PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA
SOURCE: PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9837040	A1	19980827	WO 1998-US2376	19980203
W: CA, JP, KR				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				

PRIORITY APPLN. INFO.: US 1997-797411 19970210
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 207 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB [C(NH2)3][O2NNNO2] (I) is triclinic, space group P.hivin.1, Z = 4, a 9.311(2), b 8.325(2), c 10.417(3).degree.. .alpha. 62.44(2), .beta. 77.43(2), .gamma. 67.51(2).ANG., R = 0.038. I is stabilized by hydrogen bonds between the anions and cations.
ACCESSION NUMBER: 1998:591567 CAPLUS
DOCUMENT NUMBER: 129:268206
TITLE: Guanidinium dinitramide salt: structure, stability
AUTHOR(S): Dubovitskii, F. I.; Golovina, N. I.; Pavlov, A. N.; Atovmyan, L. O.
CORPORATE SOURCE: Inst. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia
SOURCE: Doklady Akademii Nauk (1998), 360(4), 491-493
CODEN: DAKNEQ; ISSN: 0869-5652
PUBLISHER: MAIK Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 208 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Since the first synthesis of ADN by SRI there have been continuing unresolved questions about its thermal stability and decompn. kinetics. In addn. a great deal of interest has been focused on ADN compatibility with various ingredients in propellant and explosive formulations. In this study an effort has been made to increase the thermal stability of ADN by the addn. of stabilizers. Russell (1992) at NRL showed how ADN decomps. into the dinitramic acid NH4N(NO2)2 .fwdarw. NH3 + HN(NO2)2. Therefore by adding stabilizers which are basic in nature, such as urea, hexamethylenetetramine, cyanoguanidine and TEPAN the dissocn. reaction should be inhibited. Isothermal heating method was employed to obtain kinetic data by microcalorimetry and differential scanning calorimetry (DSC).

ACCESSION NUMBER: 1998:576059 CAPLUS
DOCUMENT NUMBER: 129:262431
TITLE: Thermal stability of ammonium dinitramide (ADN) and ADN containing various stabilizers
AUTHOR(S): Boswell, Robert F.; Tompa, Albert S.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: Proceedings of the Workshop on the Microcalorimetry of Energetic Materials, Leeds, UK, Apr. 7-9, 1997 (1997), T1-T7. Defence Research Agency: Sevenoaks, UK.
CODEN: 66QLAR
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 209 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Two metal dinitramide salts, sodium dinitramide (SDN) and potassium dinitramide (KDN), were synthesized and evaluated as candidate substitutes for metal nitrate and ammonium nitrate oxidizers for use in the prepn. of boron-based pyrotechnic compns. Prior to incorporation, each salt was subjected to extensive hazard testing; both were deemed to be relatively stable compds. but possessed a low ignition temp. (SDN, 123.degree. and KDN, 140.degree.C). A thermal anal. study, by differential scanning calorimetry and thermogravimetry, indicated that the decompn. of SDN and KDN was a complex series of reactions and that each salt decompd. to its equiv. nitrate salt, as evidenced by mass spectroscopy and x-ray diffraction. The dinitramide salts were used in formulating four novel boron-contg. pyrotechnic compns.: B-SDN, B-SDN-HTPB, B-KDN, and B-KDN-HTPB. Measurement of IR emission spectra for the combustion of each type of flare compn. allowed for the detection and elucidation of the principle boron oxidn. products, including the alkali metaborates and several boron oxides [BO(g), B2O3, and B2O2].

ACCESSION NUMBER: 1998:574432 CAPLUS
DOCUMENT NUMBER: 129:218683
TITLE: Metal dinitramides: new novel oxidants for the preparation of boron based flare compositions
AUTHOR(S): Dawe, Jodieann R.; Cliff, Matthew D.
CORPORATE SOURCE: Aeronautical and Maritime Research Laboratory (AMRL)-DSTO, Salisbury, 5108, Australia
SOURCE: Proceedings of the International Pyrotechnics Seminar (1998), 24th, 789-810
CODEN: PPYSD7; ISSN: 0270-1898
PUBLISHER: IIT Research Institute
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 210 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Conventional propellants and plastic-bonded explosives (PBXs) contain binders which are unlikely to be degraded by exposure to solvents or dil. acids and bases under practical demilling [demilitarization] conditions. Such polymer backbones (e.g., polysulfides, polybutadienes, polyethylene glycol, polyoxyalkylenes, etc.) and the curing linkages (e.g., hydroxy esters, hydroxy amides, urethanes, etc.) are not sufficiently labile to hydrolyze under such relatively mild conditions. However, polyesters contg. electron-withdrawing substituents on the dicarboxylic acids can be hydrolyzed under mild conditions, esp. those contg. di-, tri-, or polyethylene glycols. Urethane linkages in cured elastomers formed from isocyanates bearing an adjacent carbomethoxy moiety [esp. lysine Me ester diisocyanate (LDIM)], also enhance hydrolysis. LDIM is an advantageous curative since it hydrolyzes to the nontoxic essential amino acid, lysine.

Propellants and PBXs contg. hydroxyl-terminated polyethylene glycol adipate cured with LDIM can be demilled by immersion in aq. ammonia. Dissoln. of the binder allows facile and quant. recovery of non-polymeric energetic ingredients (e.g., ammonium perchlorate, aluminum, etc.).

ACCESSION NUMBER: 1998:574375 CAPLUS
DOCUMENT NUMBER: 129:278172
TITLE: Binders facilitating ordnance demilitarization
AUTHOR(S): Reed, Russell; Ciaramitaro, David A.; Brady, Vicki L.
CORPORATE SOURCE: Naval Air Warfare Center Weapons Division, China Lake, CA, 93555-6001, USA
SOURCE: Proceedings of the International Pyrotechnics Seminar (1998), 24th, 457-467
CODEN: PPYSD7; ISSN: 0270-1898
PUBLISHER: IIT Research Institute
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 211 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The effect of nonequil. diffusional flow on detonation velocities in composite explosives is examd. Detonation conditions are derived for complete equil., temp. and pressure equil., and two forms of pressure equil. Partial equil. are assocd. with systems which have not had sufficient time for transport to smooth out the gradients between spatially sep. regions. The nonequil. detonation conditions are implemented in the CHEQ equation of state code. We show that the detonation velocity decreases as the non-chem. degrees of freedom of the explosive are allowed to equilibrate. It is only when the chem. degrees of freedom are allowed to equilibrate that the detonation velocity increases.

ACCESSION NUMBER: 1998:573723 CAPLUS
DOCUMENT NUMBER: 129:262473
TITLE: Nonequilibrium detonation of composite explosives
AUTHOR(S): Nichols, Albert L., III
CORPORATE SOURCE: Lawrence Livermore National Laboratory, Livermore, CA, 94550, USA
SOURCE: AIP Conference Proceedings (1998), 429(Shock Compression of Condensed Matter--1997), 345-348
CODEN: APCPCS; ISSN: 0094-243X
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 212 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The propellant powder contains a mixt. of .gtoreq.2 dinitro-diaza compds. as a plasticizer in addn. to nitramine, nitrocellulose, a plastic binder, and/or explosive, and optional stabilizers and combustion moderators. Typically, the plasticizer consists of 2,4-dinitro-2,4-diazapentane 40.+-.10, 2,4-dinitro-2,4-diazahexane 45.+-.10, and 3,5-dinitro-3,5-diazaheptane 15.+-.15 wt.%. The amt. of plasticizer is 2-55 wt.%.

ACCESSION NUMBER: 1998:550394 CAPLUS
DOCUMENT NUMBER: 129:191212
TITLE: Propellant powder for barrelled weapons
INVENTOR(S): Langlotz, Walter; Muller, Dietmar
PATENT ASSIGNEE(S): Diehl Stiftung & Co., Germany
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9834891	A1	19980813	WO 1998-EP639	19980206
W: AU, CA, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 19757469	A1	19980827	DE 1997-19757469	19971223
DE 19757469	C2	20001102		
AU 9863950	A1	19980826	AU 1998-63950	19980206
AU 719937	B2	20000518		
EP 960083	A1	19991201	EP 1998-909398	19980206
R: CH, DE, FR, GB, IT, LI, NL, SE				
US 2001003295	A1	20010614	US 1999-355479	19990730
US 6309484	B2	20011030		

PRIORITY APPLN. INFO.: DE 1997-19704792 A 19970208
DE 1997-19757469 A 19971223
WO 1998-EP639 W 19980206

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 213 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The pyrotech. gas generator for automobile airbags consists of a hollow cylindrical body with a sliding cylindrical piston which seps. a reservoir from a combustion chamber. The lateral cylinder wall contains gas ports through which hot compressed gases (contained in a chamber between the piston and cylinder wall) escape. The pyrotech. charge consists of a liq. fuel introduced into the reservoir or a reducing liq. agent introduced into the reservoir and reacting with an oxidizing gas mixt. injected into the combustion chamber.

ACCESSION NUMBER: 1998:546018 CAPLUS
DOCUMENT NUMBER: 129:138166
TITLE: Pyrotechnical gas generator with a injectable liquid fuel
INVENTOR(S): Perotto, Christian; Duvacquier, Daniel
PATENT ASSIGNEE(S): SNC Livbag, Fr.
SOURCE: Fr. Demande, 25 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2757119	A1	19980619	FR 1996-15574	19961218
FR 2757119	B1	19990108		

PRIORITY APPLN. INFO.: FR 1996-15574 19961218

L4 ANSWER 214 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Flame structure of propellants based on HTPB (3%) and ADN (97%) at pressures of 0.5, 0.75, 1, and 6 atm was studied by probing mol.-beam mass-spectrometry (MBMS), of thin thermocouples, and video recording. Burning zone width at 1 atm is .apprx.1.5 mm. Thermocouple research has shown temp. fluctuations of about .+-.400.degree. at 1 atm in flame zone within 1.5-4 mm from the burning surface. Along with temp. fluctuations, fluctuations in the intensities of mass peaks 17 (NH3), 28 (CO, N2), 30 (NO),46 (HNO3, NO2), 44 (CO2, N2O) take place due to the combustion of the propellant under investigation spatial-time heterogeneity and non-stationarity. Video-recording demonstrates the existence of several brightly illuminating torches of .apprx.1 mm at the burning surface disappearing at one site and appearing at another with torch life time of 0.2 s. The combustion products compn. was found away from the burning surface and in its immediate vicinity using MBMS. The compn. of O-N-H-contg. products of propellant combustion at 1 atm is close to this of ADN combustion at 6 atm. The main C-contg. propellant combustion product at 1 atm is CO2, CO was not found.

ACCESSION NUMBER: 1998:498917 CAPLUS
DOCUMENT NUMBER: 129:138163
TITLE: Study of the flame structure of ADN/HTPB composite propellants using molecular-beam mass-spectrometry
AUTHOR(S): Paletsky, Alexander A.; Korobeinichev, Oleg P.
CORPORATE SOURCE: Inst. Chemical Kinetics Combustion, Novosibirsk, 630090, Russia
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 156.1-156.11
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 215 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The explosives ammonium dinitramide (ADN) and 2,4,6,8,10,12-hexanitrohexaazaisowurzitane (CL20) were explored by NMR under high resoln. conditions. The measurements were performed with a NMR spectrometer at 400.13 MHz proton resonance frequency. The 1H, 13C, 14N, 15N, and 17O NMR spectra were recorded and the signals were assigned. With the help of the 13C NMR, the 1JC-H coupling consts. were detd. for CL20.

ACCESSION NUMBER: 1998:498893 CAPLUS
DOCUMENT NUMBER: 129:110971
TITLE: Characterization of ADN and CL20 by NMR spectroscopy
AUTHOR(S): Kaiser, Manfred; Ditz, Bert
CORPORATE SOURCE: Wehrwissenschaftliches Inst. Material-, Explosiv-Betriebsstoffe, Swisttal, D-53913, Germany
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 130.1-130.8
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 216 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ammonium dinitramide (ADN) spheres can be shaped in a 2-phase system. Molten ADN is dispersed in a continuous phase which is not mixable with ADN. Caused by the surface- and interfacial tension the molten droplets take on a spherical shape. Emulsions from molten ADN and different oils are investigated. The solidification of the molten droplets to spherical particles takes place during the cooling down below the m.p. of ADN. By the choice of suitable substances and optimizing the process parameters, spherical ADN particles with a mean size from 5-800 .mu.m are produced.

ACCESSION NUMBER: 1998:498847 CAPLUS
DOCUMENT NUMBER: 129:110944
TITLE: Production of ammonium dinitramide (ADN) particles
AUTHOR(S): Teipel, U.; Heintz, T.; Leisinger, K.; Krause, H.
CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technologie, Pfinztal, D-76318, Germany
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 63.1-63.14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: German

L4 ANSWER 217 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The reaction of N2O5 with NH3 leads to the formation of NH4NO3, NH2NO2, and NH4N(NO2)2. The mechanism of the NH4N(NO2)2 prepn. is described proposing a double nitration of NH3 via the intermediates NH2NO2 and HN(NO2)2. Due to the catalytic decompn. of the intermediates, H2O and N2O were formed as further reaction products found by IR spectroscopy. In addn. to the known reaction of NH3 with N2O5 forming NH4N(NO2)2, NH2NO2 and its decompn. products, a 3rd reaction was discovered: the reaction of NH3 with N2O5 forming NH4NO3 and N2O with the same stoichiometry as it was obsd. for NH4N(NO2)2 synthesis. Kinetic modeling of the total reaction scheme led to a equation for the differential selectivity of NH4N(NO2)2. The equation could be confirmed by exptl. results.

ACCESSION NUMBER: 1998:498835 CAPLUS
DOCUMENT NUMBER: 129:110958
TITLE: The reaction of ammonia with dinitrogen pentoxide
AUTHOR(S): Frenck, Christian; Janitschek, Wieland; Weisweiler, Werner
CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technologie, Pfinztal, D-76327, Germany
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 50.1-50.12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: German

L4 ANSWER 218 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Thermal decompn. of dinitramide salts, the new class of high energetic explosives, are investigated. Thermal decompn. of dinitramid onium salts proceeds via the dissociative mechanism when pKa of the base is <5.0 and via the monomol. decay of the anion at pKa >7.0. Going from the melt to the solid state, the reaction mechanism does not change (excluding NH4 salt), and the rate decreases by 1-2 orders of magnitude. Unusual regularities are obsd. for decompn. of NH4 salt and metal salts in the solid phase. The solid phase reaction is 10-104 times faster than that in the melt, its rate has a sharp peak in the region of eutectics melting with the decompn. product (metal or NH4 nitrate), and it is instantly inhibited by water vapor. In the inhibited regime, the rate in the solid phase is lower than that in the liq. phase. No anomalous effects inherent in dinitramide NH4 salt and metal salts in the solid phase are obsd. during decompn. of onium salts.

ACCESSION NUMBER: 1998:498813 CAPLUS
DOCUMENT NUMBER: 129:163573
TITLE: Decomposition mechanism of dinitramide salts. Anomalous decomposition of dinitramid metal salts and ammonium salt in the solid phase
AUTHOR(S): Pavlov, Alexander M.; Nazin, Gennadiy M.
CORPORATE SOURCE: Inst. Chemical Physics, Russian Academy of Sciences, Chernogolovka, 142432, Russia
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 25.1-25.14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 219 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal behavior and hazard assessment of Li, Na, K, Rb, and Cs dinitramide are presented. Differential scanning calorimetry, thermal gravimetric anal., DTA and hot stage microscopy were used to examine the thermal decompn. of these dinitramide salts. The metal dinitramides quant. decompd. to their resp. metal nitrates, which were identified by mass spectrometry and X-ray diffraction. Hazard assessment showed that the metal dinitramides were insensitive to impact and friction, moderately insensitive to electrostatic discharge but relatively unstable under vacuum stability testing conditions.

ACCESSION NUMBER: 1998:498812 CAPLUS
DOCUMENT NUMBER: 129:124503
TITLE: Alkali metal dinitramides. Properties, thermal behavior, and decomposition products
AUTHOR(S): Cliff, Matthew D.; Edwards, Darren P.; Smith, Matthew W.
CORPORATE SOURCE: Aeronautical Maritime Research Lab., Salisbury, 5108, Australia
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 24.1-24.12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 220 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A prilling process was developed to improve the hygroscopicity, thermal stability, and safety properties of NH4 dinitramide (ADN). The process involves the addn. of additives before prilling to overcome the shortcomings. The prilled ADN shows improved properties in composite propellants. Most significant is that both the burn rate exponent and temp. sensitivity in a polyether binder system is unchanged from the analogous NH4ClO4 system. The major obstacle for booster applications are the hazards properties of ADN-contg. propellants.

ACCESSION NUMBER: 1998:498810 CAPLUS
DOCUMENT NUMBER: 129:138115
TITLE: ADN manufacturing technology
AUTHOR(S): Highsmith, T. K.; McLeod, C.; Wardle, R. B.; Schmitt, R.; Bottaro, J.; Penwell, P.; Bomberger, D.; Brough, John
CORPORATE SOURCE: Thiokol Propulsion, Brigham City, UT, 84341, USA
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 20.1-20.14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 221 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In acid medium dinitramide quant. decomps. into nitric acid and nitrogen(I) oxide. The rate of this reaction was measured by spectrophotometry in aq. H2SO4, HClO4, and HNO3 over a wide temp. range and at various compns. of the medium. On the basis of the dependence of the apparent rate consts. on the compn. of the medium and of the UV spectra of solns. of nitramide NH2NO2 in concd. nitric acid and its mixts. with H2SO4 a mechanism was proposed for acid-catalyzed decompn. of dinitramide. The proposed mechanism includes denitration of dinitramide to nitramide and nitronium cation; the subsequent decompn. of nitramide yields nitrogen(I) oxide and water. Depending on the nitrating power of the medium, the rate-detg. stage may be either denitration of dinitramide or decompn. of nitramide.

ACCESSION NUMBER: 1998:492703 CAPLUS
DOCUMENT NUMBER: 129:207720
TITLE: Kinetics and mechanism of acid-catalyzed decomposition of dinitramide
AUTHOR(S): Astrat'ev, A. A.; Kuznetsov, L. L.; Gidaspov, B. V.
CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, 198013, Russia
SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (1997), 33(12), 1745-1752
CODEN: RJOCEQ; ISSN: 1070-4280
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 222 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB According to spectrophotometric data, decompn. of 2-(N,N-dinitroamino)propionitrile in aq. buffer solns. (pH 9.5-11.5) at 17-45.degree.C quant. yields dinitramide anion. The process follows the general base catalysis pattern in terms of the Elcb mechanism with deprotonation of the substrate at the rate-detg. stage. The reaction conforms to the Bronsted equation with a coeff. .beta. close to unity.

ACCESSION NUMBER: 1998:492702 CAPLUS
DOCUMENT NUMBER: 129:216255
TITLE: Kinetics and mechanism of formation of dinitramide by reaction of 2-(N,N-dinitroamino)propionitrile with nucleophilic reagents
AUTHOR(S): Shcherbinin, M. B.; Tselinskii, I. V.; Gidaspov, B. V.
CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, 198013, Russia
SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (1997), 33(12), 1739-1744
CODEN: RJOCEQ; ISSN: 1070-4280
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 223 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The crystal structures of 3,3-dinitroazetidinium, 1, and 1-isopropyl-3,3-dinitroazetidinium dinitramide, 2, were detd. Compd. 1 crystallizes in the orthorhombic space group Cmc21, with a 9.932(1), b 8.545(1), c 11.107(1) .ANG., while 2 crystallizes in the orthorhombic space group Pbca, with a 11.464(2), b 11.657(2), c 17.916(4) .ANG.. At. coordinates and R's are given. Compd. 2 formed spontaneously from 1 by reacting with the solvent, acetone, during attempts to recrystallize it. The conformations adopted by the dinitramide ions are quite different with the bend, twist, and torsion angles for the dinitramide ion in 1 being much smaller than those in 2. Possible reasons for the dramatic differences in conformations obsd. in 1 and 2 are the different local symmetries for this ion found in the two structures as well as the absence of H bonding interactions in 2.

ACCESSION NUMBER: 1998:435664 CAPLUS
DOCUMENT NUMBER: 129:115904
TITLE: A new class of flexible energetic salts. 3. The crystal structures of the 3,3-dinitroazetidinium dinitramide and 1-isopropyl-3,3-dinitroazetidinium dinitramide salts
AUTHOR(S): Gilardi, R. D.; Butcher, Ray J.
CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research Laboratory, Washington, DC, 20375, USA
SOURCE: Journal of Chemical Crystallography (1998), 28(3), 163-169
CODEN: JCCYEV; ISSN: 1074-1542
PUBLISHER: Plenum Publishing Corp.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 224 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A no. of issues crit. to ammonium dinitramide (ADN) propellant technol. were discussed, including a survey of the chem. purity levels of ADN produced by different sources, the safety properties of ADN with different levels of water content, the prilling of neat ADN to produce spherical particles, and the aging stability and processing properties of propellants contg. ADN and ADN prills. Propellant processing needs to be conducted in a dry environment because of the hygroscopic properties of ADN. Upon aging, ADN propellants behave in a similar manner to that of conventional nitrate-ester-contg. propellants and can be stabilized by adding N-methyl-p-nitroaniline stabilizer to prolong shelf-life. The presence of a chem. stabilizer within the crystal is not crit. to obtaining good aging characteristics, but it is crit. to use small amts. (0.3-0.5 wt.%) hexamethylenetetramine or other stabilizer in the melt phase of the prilling process to ensure safety and thermal stability of the ADN melt.

ACCESSION NUMBER: 1998:435091 CAPLUS
DOCUMENT NUMBER: 129:150865
TITLE: ADN propellant technology
AUTHOR(S): Chan, May Lee; Turner, Alan; Merwin, Larry; Ostrom, Gregory; Mead, Carol; Wood, Stan
CORPORATE SOURCE: Naval Air Warfare Center Weapons Division, China Lake, CA, USA
SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 627-635. Editor(s): Kuo, Kenneth K. Begell House: New York, N. Y.
CODEN: 66JBAU
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 225 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The properties of ammonium dinitramide (ADN), with a high impulse and high burning rate and as a potential oxidizer to replace ammonium perchlorate (AP), were summarized and compared with HTPB-contg. composite propellants based on ADN, AP, and other candidate oxidizers (e.g., CL-20, ammonium nitrate, HNF). Although it has the advantages of lower friction sensitivity than RDX, minimal smoke prodn. and a less violent reaction upon combustion, ADN has the disadvantages of increased shock sensitivity and an increased sensitivity to light and moisture. The impact sensitivity of ADN is of the same magnitude as that of RDX but varied a great deal with the shape of the particles (e.g., prilled ADN is nearly twice as insensitive as RDX). The cost of prodn. of ADN has recently declined significantly. A study of the sensitivity, thermal stability, and some spectroscopic properties of ADN were given. The ignition temp. was 160.degree. (detd. by Wood's metal bath). The thermal stability, measured by microcalorimetry, showed that ADN is stable to at least 80.degree. and that impurities cause decreased thermal stability. The activation energy (Ea=158 kJ/mol) and frequency factor (K0= 6.0.cntdot.1015 s-1) were detd. from DSC data using the ASTM method E 698-79. ADN in aq. soln. is sensitive to light.

ACCESSION NUMBER: 1998:435090 CAPLUS
DOCUMENT NUMBER: 129:150864
TITLE: ADN: a new high performance oxidizer for solid propellants
AUTHOR(S): Langlet, A.; Wingborg, N.; Ostmark, H.
CORPORATE SOURCE: Defence Research Establishment, Stockholm, S-172 90, Swed.
SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 616-626. Editor(s): Kuo, Kenneth K. Begell House: New York, N. Y.
CODEN: 66JBAU
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 226 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The lower thermal cond., larger elastic compliance, and greater brittleness of a typical energetic crystal contribute to the importance of thermomech. influences on combustion and initiation of explosion behavior. For example, recent laser-induced localized heating expts. conducted on RDX and AP crystal surfaces have revealed networks of microscopic cracks in assocn. with the initiation of chem. decompn. The crystallog.-detd. ultrafine crack networks (that have been traced in AP to the orthorhombic to rock salt structure-type phase transformation as well) are assocd., in turn, with the greater hardnesses of energetic crystals. The coupled hardness and brittleness properties were attributed to the difficulty of initiating viscoplastic flow by dislocation movement, as illustrated on a hardness stress-strain basis. In this respect, recent results showed comparable hardnesses of ADN and RDX crystals that were in agreement with a report of comparable drop-wt. impact sensitivities. A dislocation pile-up avalanche explanation of such drop-wt. impact sensitivity measurements was related to model calcns. of thermally induced explosive decompns. The dependence of impact sensitivity on crystal size was of special interest because of the possibility of relation to crystal size effects that were reported for the pressure dependencies of burning rates.

ACCESSION NUMBER: 1998:435067 CAPLUS
DOCUMENT NUMBER: 129:138160
TITLE: Thermomechanical aspects of energetic crystal combustion
AUTHOR(S): Armstrong, R. W.; Elban, W. L.; Ramaswamy, A. L.; Wu, C. Cm.
CORPORATE SOURCE: University of Maryland, College Park, MD, 20742, USA
SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 313-336. Editor(s): Kuo, Kenneth K. Begell House: New York, N. Y.
CODEN: 66JBAU
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 227 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Initiation of explosion of liq. and solid explosives by rapid compression of gas inclusions has been the subject of extensive study during at least half of century. However only a limited quant., both theor. and phenomenol., description of the process up to now was achieved. This work is devoted to elaboration and application of two exptl. procedures of the initiation of energetic materials initiation by means of compression of gas cavities. One of the methods was used to generate data which revealed the role of air inclusions in causing ignitions during the rapid compression of a liq. under a broad range of conditions during prodn. or transportation. Another procedure, equipped with an impact device contg. a layer of explosive on the bottom of the hole filled by air to investigate sensitivity of solid energetic materials, was intended to simulate possible conditions of inbore premature explosions. The crit. pressure of initiation was detd. for many liq. explosives, esp. nitrocompounds, in a U-shaped tube. Dependence of crit. pressure on the hole depth was estd. in the fallhammer app. Approx. theor. relations were developed to describe exptl. results.

ACCESSION NUMBER: 1998:435065 CAPLUS
DOCUMENT NUMBER: 129:138159
TITLE: Ignition of liquid and solid nitrocompounds at fast compression of gas intrusions
AUTHOR(S): Kondrikov, B. N.; Dorofeev, E. I.; Polikarpov, Yu. N.
CORPORATE SOURCE: Mendeleev University of Chemical Technology, Moscow, 125047, Russia
SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 290-301. Editor(s): Kuo, Kenneth K. Begell House: New York, N. Y.
CODEN: 66JBAU
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 228 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Methods for the study of flame structure and kinetics of the thermal decompn. of solid propellant (SP) by probing mass spectrometry (PMS) were described. Several types of setups based on microprobe and mol. beam mass spectrometric probing for the study of flame structure at high (10 atm) and low (.ltoreq.1 atm) pressures were developed. An installation for studying thermal decompn. of SP at high heating rates (up to 20-100 degree/s) under conditions approx. similar to those in the condensed phase in the vicinity of the burning surface was described. Profiles of the species concns. in RDX and ADN flames were measured. The results of RDX flame structure modeling were in good agreement with the exptl. results. The results of gas-phase probes for ADN deflagration at 1, 3 and 6 atm. were presented. Flame structure studies of sandwich based on AP (ammonium perchlorate) confirmed a multizone structure and step-by-step mechanism of reactions in AP flames. A study of thermal decompn. of ADN by mol. beam mass spectrometry was carried out. The products of ADN thermal decompn. and products release rates on heating rate of 20 deg/s were obtained.

ACCESSION NUMBER: 1998:435043 CAPLUS
DOCUMENT NUMBER: 129:138098
TITLE: Study of flame structure, kinetics and mechanism of the thermal decomposition of solid propellants by probing mass spectrometry
AUTHOR(S): Korobeinichev, O. P.; Kuibida, L. V.; Paletsky, A. A.; Shmakov, A. G.
CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion, Siberian Branch Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 38-47. Editor(s): Kuo, Kenneth K. Begell House: New York, N. Y.
CODEN: 66JBAU
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 229 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Dinitramide salts are prepd. in several steps from di-Et N-nitro-4-azaheptanedioate [EtO2CCH2CH2N(NO2)CH2CH2CO2Et] (I) by (1) retro-Michael reaction to yield Et 3-nitraminopropanoate (EtO2CCH2CH2NHNO2)(II), (2) nitration of II with NO2BF4 to EtO2CCH2CH2N(NO2)2 (III), and (3) base hydrolysis of III to yield dinitramide [(NO2)2N-]. I is synthesized by nitration of di-Et 4-azaheptanedioate with HNO3-Br2-(CF3CO2)2O. The dinitramide salts may be effective solid oxidizers in explosives or propellants because of their higher oxygen content than nitrate salts.

ACCESSION NUMBER: 1998:417306 CAPLUS
DOCUMENT NUMBER: 129:110952
TITLE: A study on the synthesis of dinitramide salts
AUTHOR(S): Chung, Kyoo-hyun; Sim, Hyun-ho
CORPORATE SOURCE: Dept. of Chemistry, Inha University, Inchon, 402-751, S. Korea
SOURCE: Kongop Hwahak (1998), 9(1), 155-157
CODEN: KOHWE9; ISSN: 1225-0112
PUBLISHER: Korean Society of Industrial and Engineering Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: Korean

L4 ANSWER 230 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review, with 7 refs., on high-energy-d. (HED) materials with emphasis on a survey and classification of of HED materials, characteristic performance of HED materials, and military applications of HED materials. Materials discussed include CL-20, ADN, KDN, TNAZ, octanitrocubane, tetranitrocubane, and hexanitrohexaazaadamantane.

ACCESSION NUMBER: 1998:368295 CAPLUS
DOCUMENT NUMBER: 129:110936
TITLE: High energy density materials
AUTHOR(S): Zhou, Shiguang; Wu, Wenjian
CORPORATE SOURCE: Department of Materials Engineering and Applied Chemistry, National University of Defence Technology, Changsha, 410073, Peop. Rep. China
SOURCE: Huagong Shikan (1997), 11(12), 3-6
CODEN: HUSHFT; ISSN: 1002-154X
PUBLISHER: Huagong Shikan Zazhishe
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Chinese

L4 ANSWER 231 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The CNDO/2 electronic structure of nitramines was used to explain their tendency toward self-assocn. and complexation with PhOH via H bonding. The charge distribution within 19 nitramines indicated that complexation involved the O atoms of the NO2 group. The heat of self-assocn. of secondary nitramines exceeded that of primary ones.

ACCESSION NUMBER: 1998:357842 CAPLUS
DOCUMENT NUMBER: 129:122280
TITLE: Intermolecular interactions of nitramines
AUTHOR(S): Pjatakov, N. F.; Shlyapochnikov, V. A.; Cherskaya, N. O.; Vjyunova, I. B.
CORPORATE SOURCE: Institute Physical Chemistry, Russian Academy Sciences, Moscow, 117977, Russia
SOURCE: Proceedings of the International Pyrotechnics Seminar (1995), 21st, 698-712
CODEN: PPYSD7; ISSN: 0270-1898
PUBLISHER: IIT Research Institute
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 232 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Two electrostatic spark testers were applied to energetic materials such as primary and secondary explosives, pyrotechnic compns., mixts. of combustible material and oxydizer, and so on. A tester for high-sensitive materials has the combination of an approaching needle and a flat plate electrodes, and store energies up to 0.8 J. Another test for medium-sensitive materials has the combination of two pipet plate electrodes in fixed position, and can store energies of 0.11-80 J. Many energetic materials were tested using above two testers, and the order of the electrostatic spark sensitivities of the materials was detd. The correlation of the test results were examd. with other results, such as the dropping ball test. The order of sensitivity of primary explosives (i.e., the detonators and igniters) decreased in the order: PbN6/Ag+ > Pb tricinate > PbN6/La3+ > PbN6/K+ > PbN6/Tl3+ > PbN6/Ba2+ > tetrazene > PbN6/dextrin > tetrazene/50 wt.% starch > DDNP. The order of sensitivity of secondary explosives decreased in the order: PETN > RDX > HMX > ADN > HNS > Tetryl = TNT.

ACCESSION NUMBER: 1998:357764 CAPLUS
DOCUMENT NUMBER: 128:323731
TITLE: Electrostatic spark ignitability of energetic materials
AUTHOR(S): Amari, Satoru; Hosoya, Fumio; Mizushima, Yojiro; Yoshida, Tadao
CORPORATE SOURCE: Department of Materials Chemistry, Hosei University, Tokyo, 184, Japan
SOURCE: Proceedings of the International Pyrotechnics Seminar (1995), 21st, 13-31
CODEN: PPYSD7; ISSN: 0270-1898
PUBLISHER: IIT Research Institute
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 233 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal behavior and combustion characteristics of ADN, a new type of energetic material, were analyzed. A hypothesis of ADN decompn. in the initial stage of combustion was proposed. The burning rate equation of ADN and its mixts. was derived based on its chem. structure. The burning characteristics of ADN and its mixts. with different components were calcd. The calcd. results showed good agreement with the exptl. values. Based on the chem. structure and reaction, the mechanism of plateau combustion of ADN was discussed. The formation and disappearance of the intermediate product, NH4NO3, played a key role in plateau or mesa combustion of ADN. ADN is used to increase the burning rate and decrease the pressure exponent in solid propellants.

ACCESSION NUMBER: 1998:353823 CAPLUS
DOCUMENT NUMBER: 128:323728
TITLE: Theoretical calculation of the burning rate characteristics of ADN and its mixtures
AUTHOR(S): Zhao, Fengqi; Li, Shangwen; Yang, Dong; Song, Hangchang
CORPORATE SOURCE: School of Chem. Engineering, Nanjing Univ. of Science and Technology, Nanjing, 210094, Peop. Rep. China
SOURCE: Tuijin Jishu (1998), 19(2), 87-91
CODEN: TUJIEG; ISSN: 1001-4055
PUBLISHER: Tuijin Jishu Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 234 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Both general and new energetic materials have an influence on the energy and signature characteristics of solid propellants. The application prospects of the novel energetic materials were thus predicted, contg. GAP (glycidyl azide polymer), CL-20, ammonium dinitramide, RDX, HMX, and DATH (1,7-diazido-2,4,6-trinitrazaheptane).

ACCESSION NUMBER: 1998:353807 CAPLUS
DOCUMENT NUMBER: 128:323727
TITLE: Evaluation of energy and signature of XLDB propellant with new energetic materials
AUTHOR(S): Gaun, Dalin; Shang, Wengang; Feng, Wei
CORPORATE SOURCE: Xian Modern Chem. Res. Inst., Xian, 710065, Peop. Rep. China
SOURCE: Tuijin Jishu (1998), 19(2), 81-86
CODEN: TUJIEG; ISSN: 1001-4055
PUBLISHER: Tuijin Jishu Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 235 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The crystal structures of the hexaaquomagnesium (I), hexaaquomanganese (II), and hexaaquozinc (III) dihydrate salts of dinitramide were detd.: I crystallizes in monoclinic space group P21/n with a 9.589(2), b 7.420(1), c 11.116(2) .ANG., .beta. 108.25(3).degree.; II crystallizes in monoclinic space group P21/n with a 9.623(4), b 7.477(2), c 11.274(3) .ANG., .beta. 108.38(3).degree.; and III crystallizes in monoclinic space group P21/n with a 9.513(1), b 7.4270(8), c 11.164(1) .ANG., .beta. 108.806(6).degree.. At. coordinates are given. The three structures are isostructural, consisting of hexaaquo cations, dinitramide anions and H2O mols. interlinked by extensive three dimensional H bonding interactions. All O atoms as well as the central N atom of the dinitramide anion are involved in acceptor H bonds with neighboring H2O protons. As a consequence of the constraints imposed by these H bonds the dinitramide ions are almost planar with av. deviations of 0.01 .ANG. for I, 0.03 .ANG. for II and 0.03 .ANG. for III.

ACCESSION NUMBER: 1998:350334 CAPLUS
DOCUMENT NUMBER: 129:74282
TITLE: A new class of flexible energetic salts. Part 4. The crystal structures of hexaaquomagnesium(II), hexaaquomanganese(II), and hexaaquozinc(II) dihydrate salts of dinitramide
AUTHOR(S): Gilardi, R. D.; Butcher, Ray J.
CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research Laboratory, Washington, DC, 20375, USA
SOURCE: Journal of Chemical Crystallography (1998), 28(2), 105-110
CODEN: JCCYEV; ISSN: 1074-1542
PUBLISHER: Plenum Publishing Corp.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 236 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The crystal structures of cubane-1,4-diammonium dinitramide (I) and cubane-1,2,4,7-tetraammonium dinitramide (II) were detd. I crystallizes in space group P21/c with a 6.018(2), b 11.642(3), c 9.754(3) .ANG., .beta. 107.24(2).degree., while II crystallizes in space group P21/c with a 9.401(4), b 9.603(3), c 12.603(4) .ANG., .beta. 111.08(3).degree.. At. coordinates are given. In these structures the ammonium substituents are sym. attached with respect to the cubane skeleton and have neither low lying empty orbitals nor available lone pairs of electrons thus they have a minimal effect on the metrical parameters of the cubane skeleton. All C-C bond lengths are close to the overall av. C-C bond length for all reported cubanes of 1.559 .ANG.. The conformations adopted by the dinitramide ions in both structures are quite different, with the bend, twist, and torsion angles for the dinitramide ion in I being significantly larger than those found for the dinitramide ions in II, due to the different types of H bonding found in the two structures. In II, the conformation adopted by the adjacent ammonium ions allows two of the three protons from each ammonium cation to form H bonds in such a manner that they span either the syn or the anti O atoms of a single dinitramide anion. The dinitramide anion is thus constrained by these interactions and is less free to twist and bend. These results provide further confirmation that the metrical parameters of both the cubane and dinitramide moieties are flexible and reflect their local environment.
ACCESSION NUMBER: 1998:350333 CAPLUS
DOCUMENT NUMBER: 129:74281
TITLE: A new class of flexible energetic salts. Part 2. The crystal structures of the cubane-1,4-diammonium dinitramide and cubane-1,2,4,7-tetraammonium dinitramide salts
AUTHOR(S): Butcher, Ray J.; Gilardi, R. D.
CORPORATE SOURCE: Department of Chemistry, Howard University, Washington, DC, 20059, USA
SOURCE: Journal of Chemical Crystallography (1998), 28(2), 95-104
CODEN: JCCYEV; ISSN: 1074-1542
PUBLISHER: Plenum Publishing Corp.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 237 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Unavailable
ACCESSION NUMBER: 1998:346431 CAPLUS
DOCUMENT NUMBER: 129:206385
TITLE: Biotic and abiotic transformation of quadricyclane and dinitramide: immobilization of copper by bacterial sulfate reduction
AUTHOR(S): Jin, Song
CORPORATE SOURCE: Univ. of Wyoming, Laramie, WY, USA
SOURCE: (1997) 67 pp. Avail.: UMI, Order No. DA9821466 From: Diss. Abstr. Int., B 1998, 59(1), 143
DOCUMENT TYPE: Dissertation
LANGUAGE: English

L4 ANSWER 238 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Exptl. studies of CO2 laser-induced combustion of ammonium dinitramide (ADN) were performed to det. the key phys. and chem. processes involved. Exptl. conditions covered the range of 0.1-5.0 atm in argon and incident laser heat fluxes of 20-300 W/cm2. Quant. gaseous species measurements obtained by microprobe sampling and mass spectrometer anal. are presented in the form of spatial and temporal profiles. Both gas-phase temp. profiles and surface temps. measured with fine-wire thermocouples are given. Observations made with a high-magnification video recording system and Schlieren photog. of the phys. phenomena involved are also discussed. Three distinct regimes of behavior were identified during testing: laser-induced pyrolysis, laser-induced regression, and laser-assisted combustion. The phys., thermal, and chem. characteristics of these three regimes are described.
ACCESSION NUMBER: 1998:331951 CAPLUS
DOCUMENT NUMBER: 129:6102
TITLE: CO2 laser-induced combustion of ammonium dinitramide (ADN)
AUTHOR(S): Fetherolf, B. L.; Litzinger, T. A.
CORPORATE SOURCE: General Dynamics, Pittsfield, MA, USA
SOURCE: Combustion and Flame (1998), 114(3/4), 515-530
CODEN: CBFMAO; ISSN: 0010-2180
PUBLISHER: Elsevier Science Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 239 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A gas-emitting substance which is suitable for use in gas generators in different types of motor vehicle for inflating airbags comprises potassium dinitramide as oxidizing agent combined with a suitable fuel such as boron, zirconium, or titanium. The gas-emitting substance contains chlorine-free oxidizing agent.
ACCESSION NUMBER: 1998:293458 CAPLUS
DOCUMENT NUMBER: 128:296663
TITLE: Gas-emitting substance in gas generator for airbag inflation
INVENTOR(S): Sjoberg, Per; Calsson, Staffan
PATENT ASSIGNEE(S): Bofors Explosives AB, Swed.; Sjoberg, Per; Calsson, Staffan
SOURCE: PCT Int. Appl., 10 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9818743	A1	19980507	WO 1997-SE1787	19971027
W: US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
SE 9603968	A	19980501	SE 1996-3968	19961031
SE 507997	C2	19980810		

PRIORITY APPLN. INFO.: SE 1996-3968 19961031
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 240 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The kinetic regularities of the heat release during the thermal decompn. of liq. NH4N(NO2)2 at 102.4-138.9 .degree.C were studied. Kinetic data for decompn. of different forms of dinitramide and the influence of water on the rate of decompn. of NH4N(NO2)2 show that the contributions of the decompn. of N(NO2)2- and HN(NO2)2 to the initial decompn. rate of the reaction at temps. about 100 .degree.C are approx. equal. The decompn. has an autocatalytic character. The anal. of the effect of additives of HNO3 solns. and the dependence of the autocatalytic reaction rate const. on the gas vol. in the system shows that the self-acceleration is due to an increase in the acidity of the NH4N(NO2)2 melt owing to the accumulation of HNO3 and the corresponding increase in the contribution of the HN(NO2)2 decompn. to the overall rate. The self-acceleration ceases due to the accumulation of NO3- ions decreasing the equil. concn. of HN(NO2)2 in the melt.

ACCESSION NUMBER: 1998:272635 CAPLUS
DOCUMENT NUMBER: 128:262437
TITLE: Kinetics of the thermal decomposition of dinitramide 3. Kinetics of the heat release during the thermal decomposition of dinitramide ammonium salt in the liquid phase
AUTHOR(S): Kazakov, A. I.; Rubtsov, Yu. I.; Andrienko, L. P.; Manelis, G. B.
CORPORATE SOURCE: Institute of Chemical Physics in Chernogolovka, Russian Academy of Sciences, Chernogolovka, 142432, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1998), 47(3), 379-385
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 241 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Composite propellant formulations comprise a dinitramide salt oxidizer, such as ammonium dinitramide, an energetic binder, such as energetically substituted oxetane and oxirane polymers, a reactive metal, such as aluminum, and other typical propellant ingredients such as curatives and stabilizers. Propellant formulations are useful for min. smoke or reduced smoke applications, preferably include little or no reactive metal. The propellant formulations are able to combust the reactive metal efficiently, possess high burn rates, and produce little or no HCl exhaust gases.

ACCESSION NUMBER: 1998:250752 CAPLUS
DOCUMENT NUMBER: 128:284249
TITLE: Propellant formulations based on dinitramide salts and energetic binders
INVENTOR(S): Hinshaw, Carol J.; Wardle, Robert B.; Highsmith, Tom K.
PATENT ASSIGNEE(S): Thiokol Corp., USA
SOURCE: U.S., 7 pp., Cont.-in-part of U.S. 5,498,303.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5741998	A	19980421	US 1996-614303	19960312
US 5498303	A	19960312	US 1993-52035	19930421

PRIORITY APPLN. INFO.: US 1993-52035 19930421
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 242 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB When exposed to UV or visible radiation, the ammonium- and potassium salts of dinitramide in solns. decomp. to give nitrate and nitrite ions. On the basis of reaction kinetics and product compn., a photolysis mechanism is proposed in which the initial stage is homolysis of the N-N bond.

ACCESSION NUMBER: 1998:249660 CAPLUS
DOCUMENT NUMBER: 128:301966
TITLE: Photolysis of dinitramide salts in solutions
AUTHOR(S): Gidaspov, B. V.; Tselinskii, I. V.; Shcherbinin, M. B.
CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, Russia
SOURCE: Russian Journal of General Chemistry (Translation of Zhurnal Obshchei Khimii) (1997), 67(6), 911-914
CODEN: RJGCEK; ISSN: 1070-3632
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 243 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The kinetic regularities of the thermal decompn. of dinitramide in aq. solns. of HNO3, in anhyd. acetic acid, and in several other org. solvents were studied. The rate of the decompn. of dinitramide in aq. HNO3 is detd. by the decompn. of mixed anhydride of dinitramide and nitric acid (N4O6) formed in the soln. in the reversible reaction. The decompn. of the anhydride is a reason for an increase in the decompn. rates of dinitramide in solns. of HNO3 as compared to those in solns. in H2SO4 and the self-acceleration of the process in concd. aq. solns. of dinitramide. The increase in the decompn. rate of non-dissocd. dinitramide compared to the decompn. rate of the N(NO2)2- anion is explained by a decrease in the order of the N-NO2 bond. The increase in the rate const. of the decompn. of the protonated form of dinitramide compared to the corresponding value for neutral mols. is due to the dehydration mechanism of the reaction.

ACCESSION NUMBER: 1998:240505 CAPLUS
DOCUMENT NUMBER: 128:327083
TITLE: Kinetics of the thermal decomposition of dinitramide. 2. Kinetics of the reactions of dinitramide with decomposition products and other components of a solution
AUTHOR(S): Kazakov, A. I.; Rubtsov, Yu. I.; Manelis, G. B.; Andrienko, L. P.
CORPORATE SOURCE: Institute of Chemical Physics in Chernogolovka, Russian Academy of Sciences, Chernogolovka, 142432, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1998), 47(1), 39-45
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 244 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The reactions of KN(NO2)2 with BrF5, ClF5 and IF7 were studied. The N(NO2)2- anion is superior to NO3- as a reagent for the controlled, stepwise replacement of two F ligands by a doubly bonded O atom. Thus, KN(NO2)2 readily reacts with BrF5 at -45.degree. to give KBrOF4, N2O and FNO2 in quant. yield. With ClF5 at -13.degree., an equimolar mixt. of KClOF4 and KClF4 was obtained. The formation of KClOF4 is remarkable because with most other F-O exchange reagents, such as NO3-, the exchange process cannot be arrested at the ClOF4- stage and yields FClO2 as the only product. In the case of IF7, deoxygenation of the desired IOF6- product occurred resulting instead in the formation of KIF6 which, in the presence of excess IF7, formed the novel KIF6.cntdot.2IF7 adduct.

ACCESSION NUMBER: 1998:210389 CAPLUS
DOCUMENT NUMBER: 128:330377
TITLE: Dinitramide anion as a reagent for the controlled replacement of fluorine by oxygen in halogen fluorides
AUTHOR(S): Christe, K. O.; Wilson, W. W.
CORPORATE SOURCE: Air Force Res. Lab., Raytheon STX, Propulsion Directorate, Edwards Air Force Base, CA, 93524, USA
SOURCE: Journal of Fluorine Chemistry (1998), 89(1), 97-99
CODEN: JFLCAR; ISSN: 0022-1139
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 245 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Kinetics of thermal decompn. of dinitramide in aq. and H2SO4 solns. were studied in a wide temp. range. The rate of the thermal decompn. of dinitramide is detd. by the rates of decompn. of different forms of dinitramide as the acidity of the medium increases: 1st, N(NO2)- anions, then HN(NO2)2 mols., and finally, protonated H2N(NO2)2+ cations. The temp. dependences of the rate consts. of the decompn. of N(NO2)- (kan) and HN(NO2)2 (k'ac) and the equil. const. of dissocn. of HN(NO2)2 (Ka) were detd.: kan = 1.7 .times. 1017 exp(-20.5 .times. 103/T), s-1, k'ac = 7.9 .times. 1016 exp(-16.1 .times. 103/T), s-1, and Ka = 1.4.cntdot.10 exp(-2.6 .times. 103/T). The temp. dependences of the decompn. rate const. of H2N(NO2)2+ (kd) and the equil. const. of the dissocn. of H2N(NO2)2+ (Kd) were estd.: kd = 1012 exp(-7.9 .times. 103/T), s-1 and Kd = 1.1 exp(6.4 .times. 103/T). The kinetic and thermodn. consts. obtained make it possible to calc. the decompn. rate of dinitramide solns. in a wide range of temps. and acidities of the medium.

ACCESSION NUMBER: 1998:200927 CAPLUS
DOCUMENT NUMBER: 128:270302
TITLE: Kinetics of thermal decomposition of dinitramide 1. Decomposition of different forms of dinitramide
AUTHOR(S): Kazakov, A. I.; Rubtsov, Yu. I.; Manelis, G. B.; Andrienko, L. P.
CORPORATE SOURCE: Institute of Chemical Physics in Chernogolovka, Russian Academy of Sciences, Chernogolovka, 142432, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1997), 46(12), 2015-2020
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 246 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The structures, energies at 0 K and enthalpies at 298 K were computed for 37 mols., ions and transition states that were implicated in the thermal decompn. of ammonium dinitramide. A d. functional procedure was used: DF/B3P86/6-31+G**. These data permit the calcn. of .DELTA.H (298 K) for a large no. of possible decompn. steps; some of these results are presented and discussed. Computed values are reported for the lattice energy of ammonium dinitramide, .DELTA.H (298 K) = 144 kcal mol-1, its heat of sublimation to NH3 + HN(NO2)2, .DELTA.H (298 K) = 44 kcal mol-1, and the gas phase heat of formation of HN(NO2)2, .DELTA.Hf298=19 kcal mol-1.

ACCESSION NUMBER: 1998:199396 CAPLUS
DOCUMENT NUMBER: 128:327157
TITLE: Energetics of ammonium dinitramide decomposition steps
AUTHOR(S): Politzer, Peter; Seminario, Jorge M.; Concha, Monica C.
CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148, USA
SOURCE: THEOCHEM (1998), 427, 123-130
CODEN: THEODJ; ISSN: 0166-1280
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 247 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The use of d. functional procedures for computing bond dissocn. energies, heats of chem. reactions, and heats of formation is examd. and discussed. The DF/B3P86/6-31+G** combination of functionals and basis set has been found to be quite effective for the first two purposes, and is being extended to heats of formation, although these are presently being obtained with good accuracy at the DF/BP86/6-31G** level. The decompn. of the energetic compd. ammonium dinitramide is considered in some detail. It is suggested that the initial step may be sublimation to NH3 + HN(NO2)2, followed by loss of NO2 from either HN(NO2)2 or its tautomer O2N-NN(O)OH. Computed .DELTA.H(298 K) are listed for 32 possible intermediate steps.

ACCESSION NUMBER: 1998:101279 CAPLUS
DOCUMENT NUMBER: 128:249228
TITLE: Use of density functional methods to compute heats of reactions
AUTHOR(S): Politzer, Peter; Seminario, Jorge M.
CORPORATE SOURCE: Department of Chemistry, University of New Orleans, New Orleans, LA, 70148, USA
SOURCE: ACS Symposium Series (1998), 677(Computational Thermochemistry), 359-368
CODEN: ACSMC8; ISSN: 0097-6156
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 65 THERE ARE 65 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 248 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Dinitroamide ion was oxidized at a potential of 2.3-2.4 V and reduced at -0.4 V (Ag/AgCl ref. electrode). The photochem. oxidn. of a soln. of a dinitroamide salt and the spin trap, N-tert-butyl-.alpha.-phenylnitrone (PBN), in acetonitrile or dichloromethane gave rise to a weak 3 .times. 5 lines EPR spectrum, assigned to the formal spin adduct of dinitroamino radical and PBN, (NO2)2N-PBN.bul.. The reaction is suggested to involve oxidn. of PBN to its radical cation, followed by capture of dinitroamide ion by the latter. The thermal oxidn. of similar solns. gave rise to a different, much more intense EPR spectrum, the hyperfine splitting consts. of which showed the presence of three different nitrogens and the absence of the .alpha.-hydrogen of PBN. The spectrum was assigned to O2N-N:C(Ph)-N(O.bul.)(But), formally derived from the dinitroamino spin adduct by elimination of nitrous acid. Mechanistically, this transformation presumably occurs by one-electron oxidn. of (NO2)2N-PBN.bul., followed by loss of a proton and NO2 from the nitrosonium ion intermediate formed. The authors caution safety in the use of explosive dinitroamide salts.

ACCESSION NUMBER: 1998:100928 CAPLUS
DOCUMENT NUMBER: 128:204511
TITLE: Reaction between dinitroamide ion and the radical cation of N-tert-butyl-.alpha.-phenylnitrone. Formal elimination of nitrous acid from a spin adduct
AUTHOR(S): Eberson, Lennart
CORPORATE SOURCE: Department Chemistry, Lund University, Lund, S-22100, Swed.
SOURCE: Acta Chemica Scandinavica (1998), 52(2), 207-211
CODEN: ACHSE7; ISSN: 0904-213X
PUBLISHER: Munksgaard International Publishers Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 249 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review, with 4 refs., of the calcn. of energy output of gun propellant formulations, and attempts to increase the energy of gun propellants using new energetic components. Calcns. were carried out with the ICT computer code based on the virial equation of state with the second and third virial coeffs. and taking into account the oxygen balance, enthalpy of formation, and loading d. Addnl. components discussed include energetic plasticizers, nitramine propellants, and binder systems (e.g., polybutadiene, glycidyl azide polymer, cellulose acetate butyrate, etc.). The performance of these LOVA-propellants was discussed in connection with heat of formation, the oxygen balance, and the polymeric binder system. Finally, energetic compds. such as NTO, CL 20, TNAZ, ANTA and ammonium dinitramide were calcd. using the ICT Thermodn. Code.

ACCESSION NUMBER: 1998:84591 CAPLUS
DOCUMENT NUMBER: 128:142753
TITLE: Energetic materials and their influence on the energy-output of propellants
AUTHOR(S): Volk, F.; Bathelt, H.
CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfinztal, 76327, Germany
SOURCE: Theory and Practice of Energetic Materials, [Proceedings of the International Autumn Seminar on Propellants, Explosives and Pyrotechnics], 2nd, Shenzhen, Peop. Rep. China, Oct. 8-11, 1997 (1997), 341-349. Editor(s): Feng, Changgen; Ou, Yuxiang; Zeng, Qingxuan. Publishing House of Ordnance Industry: Beijing, Peop. Rep. China.
CODEN: 65OYAF
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 250 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The effects of some novel energetic materials (esp. oxidizers) used in crosslinked double-base propellants on the energy and signature characteristics were compared. ADN (ammonium dinitramide) was better than CL-20 and DATH (1,7-diazido-2,4,6-trinitraazaheptane) with respect to increasing energy as an oxidizing agent. However, the d.-based specific impulse of CL-20 was the largest of the oxidizers. With respect to the required post-combustion treatment, ADN was superior to CL-20 and DATH. Compared with inert binder, glycidyl azide polymer can not only increase the specific impulse but decreases the signature of the propellant.

ACCESSION NUMBER: 1998:84578 CAPLUS
DOCUMENT NUMBER: 128:142761
TITLE: Evaluation of novel energetic materials used in low signature propellant
AUTHOR(S): Guan, Dalin; Shan, Wengang; Wei, Feng
CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xi'an, 710065, Peop. Rep. China
SOURCE: Theory and Practice of Energetic Materials, [Proceedings of the International Autumn Seminar on Propellants, Explosives and Pyrotechnics], 2nd, Shenzhen, Peop. Rep. China, Oct. 8-11, 1997 (1997), 250-255. Editor(s): Feng, Changgen; Ou, Yuxiang; Zeng, Qingxuan. Publishing House of Ordnance Industry: Beijing, Peop. Rep. China.
CODEN: 65OYAF
DOCUMENT TYPE: Conference
LANGUAGE: English
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 251 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal decompn. of dinitramide-amine ("onium") salts proceeds via a dissociative mechanism when the pKa of the base is <5.0 and via the unimol. decay of the anion at pKa >7.0. Upon going from the melt to the solid state, the reaction mechanism did not change, and the rate decreased by 1-2 orders of magnitude. No anomalous effects inherent in dinitramide metal salts in the solid phase were obsd. during decompn. of the salts.

ACCESSION NUMBER: 1998:70245 CAPLUS
DOCUMENT NUMBER: 128:142755
TITLE: Decomposition mechanism of dinitramide onium salts
AUTHOR(S): Pavlov, A. N.; Nazin, G. M.
CORPORATE SOURCE: Institute Chemical Physics Chernogolovka, Russian Academy Sciences, Chernogolovka, 142432, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1997), 46(11), 1848-1850
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 252 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Unusual regularities are obsd. for decompn. of dinitramide metal salts (with Li+, Na+, Rb2+, and (NH2)3C+) in the solid phase: the solid-phase reaction is 10-103 times faster than that in the melt, its rate has a sharp peak in the region of eutectics melting with the decompn. product (metal nitrate), and it is instantly inhibited by water vapor. In the inhibited regime, the rate in the solid phase is lower than that in the liq. phase. No indications of this anomalous behavior are obsd. for the decompn. of the dinitramide guanidinium salt.

ACCESSION NUMBER: 1998:70243 CAPLUS
DOCUMENT NUMBER: 128:104066
TITLE: Anomalous decomposition of dinitramide metal salts in the solid phase
AUTHOR(S): Babkin, S. B.; Pavlov, A. N.; Nazin, G. M.
CORPORATE SOURCE: Institute Chemical Physics Chernogolovka, Russian Academy Sciences, Chernogolovka, 142432, Russia
SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1997), 46(11), 1844-1847
CODEN: RCBUEY; ISSN: 1066-5285
PUBLISHER: Consultants Bureau
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 253 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A set of model gun propellants was designed, prepd. and characterized to det. the effects of substitution of certain novel ingredients for more mundane ingredients in a simple formulation. Of particular interest was the burning behavior in the presence of an elec. plasma, the conditions found in an electrothermal chem. (ETC) gun. The non-ETC characteristics are discussed. Thermochem. calcns. were performed on a host of formulations which made use of novel ingredients such as CL-20, TNAZ (trinitro azetidine), ADN (ammonium dinitramide), BAMO-AMMO and modified Hytrels. The trends for the variation of the thermochem. properties with the level of the novel ingredients were plotted. Data from these plots were used along with less quant. information concerning processability, probable compatibility and cost to select a few formulations for processing. The formulations were processed to produce small samples. The process conditions are described. Data were developed on the finished propellant to allow interim hazard classifications (IHCs) to be issued. These safety and sensitivity data and other data obtained to characterize these formulations are presented.

ACCESSION NUMBER: 1998:60231 CAPLUS
DOCUMENT NUMBER: 128:104051
TITLE: The selection, processing and characterization of a set of gun propellants utilizing novel ingredients
AUTHOR(S): Peters, Susan T.; Wardle, Robert B.; Walalce, Ingvar A.; Haaland, Andrew C.
CORPORATE SOURCE: Indian Head Div., Naval Surface Warfare Cent., Indian Head, MD, USA
SOURCE: Proceedings - International Symposium on Energetic Materials Technology, Phoenix, 1995 (1995), 181-185. American Defense Preparedness Association: Arlington, Va.
CODEN: 65NDAF
DOCUMENT TYPE: Conference
LANGUAGE: English

L4 ANSWER 254 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Thermodn. data such as flame temp., mole no., mean mol. wt., heat of explosion and specific energy were discussed as the main influences for prediction of the energy-output of gun propellants. In connection with improved performance, a list of components, some of them new, was established which could be used to increase the energy without increasing the sensitivity of the propellants. Initially, conventional plasticizers were replaced by energetic plasticizers. Taking into account different propellant formulations, the thermodn. parameters were calcd. which are of interest for improvement of the specific energy. On the other hand, nitramine propellants using different binder systems such as polybutadiene, glycidyl azide polymer, and cellulose acetate butyrate were investigated in a closed bomb in order to evaluate the energy-output and in addn. the reaction products by gas anal. The performance of these LOVA-propellant was discussed in connection with heat of formation, the oxygen balance, and the type of polymeric binder system. Finally, energetic compds. such as NTO, CL-20, TNAZ, ANTA, and ammonium dinitramide (ADN) were calcd. using the ICT Thermodn. Code, in oder to assess the energy-output and to be able to discuss possible improvements in performance.

ACCESSION NUMBER: 1998:60147 CAPLUS
DOCUMENT NUMBER: 128:117001
TITLE: Influence of energetic materials on the energy-output of gun propellants
AUTHOR(S): Volk, F.; Bathelt, H.
CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technol. (ICT), Pfinztal, 76327, Germany
SOURCE: Proceedings - International Symposium on Energetic Materials Technology, Phoenix, 1995 (1995), 82-89. American Defense Preparedness Association: Arlington, Va.
CODEN: 65NDAF
DOCUMENT TYPE: Conference
LANGUAGE: English

L4 ANSWER 255 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Recently ADN was disclosed to replace AP or AN as a solid oxidizer. 3-N,N-Dinitraminopropanitrile, a key intermediate in the prepn. of ADN, was synthesized from bis(2-cyanoethyl)amine by the sequence: nitration of bis(2-cyanoethyl)amine followed by decyanoethylation by base and the second nitration with NO2BF4. 3-N-Nitro-bis(2-cyanoethyl)amine could also be obtained by the oxidn. of the corresponding N-nitroso compd.

ACCESSION NUMBER: 1998:60091 CAPLUS
DOCUMENT NUMBER: 128:104058
TITLE: Study on the synthesis of ammonium dinitramide
AUTHOR(S): Chung, Kyoo-hyun; Sim, Hyun-ho
CORPORATE SOURCE: Dep. Chem., Inha Univ., Inchon, 402-751, S. Korea
SOURCE: Journal of the Korean Chemical Society (1997), 41(12), 661-665
CODEN: JKCSEZ; ISSN: 1017-2548
PUBLISHER: Korean Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: Korean

L4 ANSWER 256 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The lattice energies of ammonium, Na, and K salts can be expressed anal. in terms of the total charges of the anions and their computed surface electrostatic potentials and areas. The calcns. were carried out at the HF/6-31+G* level for 17 singly and doubly charged anions. Predicted lattice energies are presented for 10 compds.

ACCESSION NUMBER: 1998:38958 CAPLUS
DOCUMENT NUMBER: 128:174336
TITLE: Relationships between Lattice Energies and Surface Electrostatic Potentials and Areas of Anions
AUTHOR(S): Politzer, Peter; Murray, Jane S.
CORPORATE SOURCE: Department of Chemistry, University of New Orleans, New Orleans, LA, 70148, USA
SOURCE: Journal of Physical Chemistry A (1998), 102(6), 1018-1020
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 257 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A method for producing substantially spherical energetic compds. such as ammonium dinitramide (ADN) which minimizes the time during which the ADN is melted comprises providing solid ADN, feeding the ADN at a controlled continuous rate to a heating means, melting the ADN and feeding the melted ADN continuously to a non-solvent cooling fluid maintained at a temp. below the temp. of solidification of the ADN, agitating the cooling fluid in a manner which promotes the formation of droplets of controlled size which solidify in the cooling fluid to produce substantially spherical ammonium dinitramide in a particle size corresponding to the droplet size. The ammonium dinitramide is a non-chlorine contg. oxidizer useful in rocket propellant and gas generating devices such as airbag inflators.

ACCESSION NUMBER: 1998:13916 CAPLUS
DOCUMENT NUMBER: 128:77246
TITLE: Process for preparing spherical particles of energetic compounds
INVENTOR(S): Guimont, John
PATENT ASSIGNEE(S): United Technologies Corporation, USA
SOURCE: PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9747571	A1	19971218	WO 1997-US10141	19970611
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9733095	A1	19980107	AU 1997-33095	19970611
EP 910559	A1	19990428	EP 1997-928947	19970611
EP 910559	B1	20010228		
R: DE, FR, GB, IT, SE				
JP 2001501898	T2	20010213	JP 1998-501803	19970611

PRIORITY APPLN. INFO.: US 1996-661437 A 19960611
WO 1997-US10141 W 19970611

L4 ANSWER 258 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The new energetic material ammonium dinitramide (ADN), NH4N(NO2)2, has been investigated with regard to its thermal properties and decompn. behavior. Thermal decompn. of ADN is obsd. after complete melting at 91.5.degree.. The main decompn. pathway is based on the formation of NH4NO3 and N2O followed by the thermal decompn. of NH4NO3 to N2O and H2O at higher temps. Side reactions forming NO2, NO, NH3, N2 and O2 are described and a mechanism for the acid-catalyzed decompn. of hydrogen dinitramide, dissocn. product of ADN, is proposed.

ACCESSION NUMBER: 1998:1693 CAPLUS
DOCUMENT NUMBER: 128:63610
TITLE: The new energetic material ammonium dinitramide and its thermal decomposition
AUTHOR(S): Lobbecke, S.; Keicher, T.; Krause, H.; Pfeil, A.
CORPORATE SOURCE: Fraunhofer Inst. Chemische Technol., Pfinztal, D-76318, Germany
SOURCE: Solid State Ionics (1997), 101-103(Pt. 2), 945-951
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 259 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The crystal structures of the K, Rb, and Cs salts of dinitramide were detd. K dinitramide is monoclinic, space group P21/n, with a 6.610(5), b 7.191(6), c 9.259(2) .ANG., and .gamma. 97.36(3).degree.; dc = 2.207, Z = 4; R = 0.065 for 560 reflections. Rb dinitramide is orthorhombic, space group Pca21, with a 14.244(3), b 7.513(1), c 8.858(2) .ANG.; dc = 2.682, Z = 4 (2 mols./Z); R = 0.050 for 637 reflections. Cs dinitramide is monoclinic, space group P21/a, with a 14.046(30), b 7.690(1), c 9.860(2) .ANG., and .gamma. 72.99(2).degree.; dc = 3.115, Z = 4 (2 mols./Z); R = 0.075 for 492 reflections. In the anion of the K salt the nitro groups are not equiv. In the Rb and Cs salts the 2 independent anions have different conformations.

ACCESSION NUMBER: 1997:788662 CAPLUS
DOCUMENT NUMBER: 128:82437
TITLE: Structural features of salts of dinitramide with alkali metals
AUTHOR(S): Dubivitskii, F. I.; Golovina, N. I.; Pavlov, A. N.; Atovmyan, L. O.
CORPORATE SOURCE: Inst. Khim. Fiz., Chernogolovka, Russia
SOURCE: Doklady Akademii Nauk (1997), 355(2), 200-202
CODEN: DAKNEQ; ISSN: 0869-5652
PUBLISHER: MAIK Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 260 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A symposium. A comparative study of about 20 simplest primary, secondary,
and tertiary amines contg. acyl-, nitroso-, cyano-, nitro- and chloro-substituents was performed by Hartree-Fock and MP2 ab initio methods using
various basis sets from the 6-31G* to 6-311G** one. The effect of electron correlation on the vibrational spectra was discussed.

ACCESSION NUMBER: 1997:725648 CAPLUS
DOCUMENT NUMBER: 128:3370
TITLE: Effect of electron correlation on interpretation of vibrational spectra and on energy barrier and structural parameter estimates for simplest amines
AUTHOR(S): Khaikin, L. S.; Palafox, M. Alcolea; Grikina, O. E.
CORPORATE SOURCE: Dep. of Chemistry, Moscow State University, Moscow GSP-3, 119899, Russia
SOURCE: Spectroscopy of Biological Molecules: Modern Trends, (European Conference on Spectroscopy of Biological Molecules), 7th, Madrid, 1997 (1997), 543-544. Editor(s): Carmona, Pedro; Navarro, Raquel; Hernanz, Antonio. Kluwer: Dordrecht, Neth.
CODEN: 65FQAE
DOCUMENT TYPE: Conference
LANGUAGE: English

L4 ANSWER 261 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The authors report the synthesis of a completely new, stable class of inorg. salts named the dinitramide salts. These salts are based on a newly discovered nitrogen oxide anion known as the dinitramide anion, [N(NO2)2]-. The dinitramide anion is a uniquely stable, high oxygen d. grouping that can be prepd. in many salt combinations including the ammonium, cesium and hydrazinium salts. The dinitramide anion has both fundamental scientific interest and practical applications. The authors describe here the synthesis of dinitramide salts and give a preliminary report on their properties.

ACCESSION NUMBER: 1997:667163 CAPLUS
DOCUMENT NUMBER: 127:242328
TITLE: 1,1,3,3-Tetraoxo-1,2,3-triazapropene Anion, a New Oxy Anion Of Nitrogen: The Dinitramide Anion and Its Salts
AUTHOR(S): Bottaro, Jeffrey C.; Penwell, Paul E.; Schmitt, Robert J.
CORPORATE SOURCE: Functionally Designed Materials Program Chemistry and Chemical Engineering Laboratory, SRI International, Menlo Park, CA, 94025, USA
SOURCE: Journal of the American Chemical Society (1997), 119(40), 9405-9410
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 262 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Unavailable

ACCESSION NUMBER: 1997:662329 CAPLUS
DOCUMENT NUMBER: 127:271750
TITLE: Coordination chemistry and photoreactivity of the dinitramide ion
AUTHOR(S): Trammell, Scott Alan
CORPORATE SOURCE: Univ. of Wyoming, Laramie, WY, USA
SOURCE: (1997) 118 pp. Avail.: UMI, Order No. DA9730363 From: Diss. Abstr. Int., B 1997, 58(4), 1878
DOCUMENT TYPE: Dissertation
LANGUAGE: English

L4 ANSWER 263 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review, with 40 refs., of domestic and international development of high-energy-d. materials, esp. ammonium dinitramide (ADN), .beta.-hexanitrohexaazaisowurtzitane (HNIW), 1,3,3-trinitroazetidine (TNAZ), and high-ring-strain polycyclic alkanes (as candidate high-energy-d. jet fuels).

ACCESSION NUMBER: 1997:661874 CAPLUS
DOCUMENT NUMBER: 127:333562
TITLE: Development and application of high energy density material and high density hydrocarbon fuel
AUTHOR(S): Cheng, Sheng-San
CORPORATE SOURCE: Fourth Division, Chung-Shan Inst. Sci. and Technology, Lung-Tan, Taiwan
SOURCE: Huaxue (1997), 55(2), 71-80
CODEN: HUHSA2; ISSN: 0441-3768
PUBLISHER: Chinese Chemical Society
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Chinese

L4 ANSWER 264 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The crystal structures of the ammonium, 1, Li, 2, K, 3, and Cs, 4, salts of a new N oxy anion, N3O4-, were detd. Crystallog. data are given. In 1
there are two interpenetrating three-dimensional lattices linked by strong
H-bonding interactions between all four ammonium protons and three of the four dinitramide O atoms. Even though 2-4 have similar formula units each
has a completely different structure characterized by differing coordination nos. and geometries. The structure of 2 is unique in that it
is the only one contg. a dinitramide ion in the C2 conformation predicted by ab initio studies to be the min. energy conformation. There is good agreement between the predicted and exptl. metrical parameters for the C2 conformer of the dinitramide anion.

ACCESSION NUMBER: 1997:660850 CAPLUS
DOCUMENT NUMBER: 127:255565
TITLE: A New Class of Flexible Energetic Salts: The Crystal Structures of the Ammonium, Lithium, Potassium, and Cesium Salts of Dinitramide
AUTHOR(S): Gilardi, Richard; Flippen-Anderson, J.; George, Clifford; Butcher, Ray J.
CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research
Laboratory, Washington, DC, 20375, USA
SOURCE: Journal of the American Chemical Society (1997), 119(40), 9411-9416
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 265 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Thermogravimetric data for the decompn. of ammonium dinitramide (ADN) have
been obtained under isothermal and nonisothermal conditions in order to det. the efficacy of different methods for analyzing the kinetics of solid-state reactions. A widely used model-fitting method gives excellent
fits to the exptl. data but yields highly uncertain values of the Arrhenius parameters when applied to nonisothermal data because temp. and extent of conversion are not independent variables. Therefore, comparison
of model fitting results from isothermal and nonisothermal expts. is practically meaningless. Conversely, model-free isoconversional methods of kinetic anal. yield similar dependencies of the activation energy on the extent of conversion for isothermal and nonisothermal expts. Anal. of
synthetic data generated for a complex kinetic model suggests that, in the
general case, the identical dependencies are unlikely to result from expts. obtained under isothermal and nonisothermal conditions.

ACCESSION NUMBER: 1997:651152 CAPLUS
DOCUMENT NUMBER: 127:268496
TITLE: Isothermal and Nonisothermal Reaction Kinetics in Solids: In Search of Ways toward Consensus
AUTHOR(S): Vyazovkin, Sergey; Wight, Charles A.
CORPORATE SOURCE: Department of Chemistry, University of Utah, Salt Lake
City, UT, 84112, USA
SOURCE: Journal of Physical Chemistry A (1997), 101(44), 8279-8284
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 266 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The mechanisms of the hydrolysis reactions of some N-nitrobenzenesulfonamides (YC6H4SO2NHNO2), N-nitrobenzamides (YC6H4CONHNO2)
and N-methyl-N-nitrobenzamides (YC6H4CON(CH3)NO2) have been detd. in aq. sulfuric acid using the excess acidity method. Also studied were N-methyl-N-nitroacetamide and nitrourea, with N,N-dinitromethylamine for comparison. N-Nitrobenzene-sulfonamides give either YC6H4SO2+ and NH2NO2 (electron-donating Y) or YC6H4SO2NH2 and NO2+ (electron-withdrawing Y) in A1 processes; the change in product is reflected in the different .rho.+ values found for the two modes of cleavage. N-Nitrobenzamides behave similarly in strong acid, with an A1 reaction following presumed O-protonation, but in more moderate acid they exhibit a neutral water-catalyzed hydrolysis mechanism, and in dil. acid the parent N-nitrobenzamides actually show hydroxide catalysis. N-Methyl-N-nitroacetamide shows only the neutral water-catalyzed process. Nitrourea has an A1 acid-catalyzed hydrolysis reaction in acid, analogous to the known B1 mechanism in base (also visible in dil. sulfuric acid), but has no water reaction; the pH-rate profile for the hydrolysis of this substance is here extended into the non-ideal acid region.
N,N-Dinitromethylamine loses NO2+ in an A1 process following initial nitro-group protonation, giving N-nitromethylamine which is identifiable by its known hydrolysis rate. Activation parameters, m*m.thermod. slopes and .rho.+ values given by the excess acidity anal. are shown to be compatible with the postulated mechanisms.

ACCESSION NUMBER: 1997:637117 CAPLUS
DOCUMENT NUMBER: 127:307034
TITLE: The mechanisms of the hydrolyzes of N-nitrobenzenesulfonamides, N-nitrobenzamides and some
other N-nitro amides in aqueous sulfuric acid
AUTHOR(S): Cox, Robin A.
CORPORATE SOURCE: Department of Chemistry, University of Toronto, Toronto, ON, M5S 3H6, Can.
SOURCE: Journal of the Chemical Society, Perkin Transactions 2: Physical Organic Chemistry (1997), (9), 1743-1750
CODEN: JCPKBH; ISSN: 0300-9580
PUBLISHER: Royal Society of Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 267 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review, with 42 refs., of Fourier-transform IR (FTIR) spectrometry for the study of thermal decompn. of surfaces and flame diagnostics in combustion of solid propellants. Topics discussed include anal. of surface pyrolysis processes by FTIR spectrometry, T-jump FTIR; surface chem. of nitramines, NH4ClO4, NH4NO3, ammonium dinitramide; and the distinction between pyrolysis of thin films vs. surface combustion, and FTIR spectrometry of flames.

ACCESSION NUMBER: 1997:612725 CAPLUS
DOCUMENT NUMBER: 127:265085
TITLE: Surface pyrolysis phenomena and flame diagnostics by FTIR spectroscopy
AUTHOR(S): Brill, Thomas B.
CORPORATE SOURCE: Department of Chemistry, University of Delaware, Newark, DE, 19716, USA
SOURCE: Non-Intrusive Combustion Diagnostics, [Papers presented at the International Symposium on Special Topics in Chemical Propulsion], 3rd, Scheveningen, Neth., May 10-14, 1993 (1994), Meeting Date 1993, 191-208. Editor(s): Kuo, Kenneth K.; Parr, Timothy P.
Begell House: New York, N. Y.
CODEN: 65AUAZ
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English

L4 ANSWER 268 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The triazidocarbenium cation, C(N3)3+, was successfully combined with the energetic N(NO2)2- and ClO4- anions in the form of highly energetic salts.
The new C(N3)3+BF4- salt was also prepd., and all compds. were characterized by their material balances and vibrational spectroscopy. Electronic structure calcns. were carried out for C(N3)3+ at the B3LYP/6-31G*, B3LYP/cc-pVDZ, B3LYP/cc-pVTZ, and HF/cc-pVDZ levels of theory. At all levels, the energy min. is the planar C3h structure, and the vibrational spectra were assigned and analyzed for this structure. The heats of formation of C(N3)3+N(NO2)2- and C(N3)3+ClO4- were estd. to be endothermic by 252 and 218 kcal/mol, which explain the high explosive power of these salts.

ACCESSION NUMBER: 1997:603141 CAPLUS
DOCUMENT NUMBER: 127:178392
TITLE: Novel High-Energy Density Materials. Synthesis and Characterization of Triazidocarbenium Dinitramide, -Perchlorate, and -Tetrafluoroborate
AUTHOR(S): Petrie, Mark A.; Sheehy, Jeffrey A.; Boatz, Jerry A.; Rasul, Golam; Prakash, G. K. Surya; Olah, George A.; Christe, Karl O.
CORPORATE SOURCE: Hughes STX and Rocket Propulsion Directorate, Edwards Air Force Base, CA, 93524, USA
SOURCE: Journal of the American Chemical Society (1997), 119(38), 8802-8808
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 269 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal stability of an N,N-dinitramide salt of the formula M+[N(NO2)2]- where M+ is a nitrogen-contg. cation, is improved by mixing the N,N-dinitramide salt with a prophosphatrane compd. of the formula P[(RNCH2CH2)3N] where R, R' and R" are the same or different and are aryl or alkyl. A new compn. of matter is formed by mixing the N,N-dinitramide salt and the prophosphatrane compd.

ACCESSION NUMBER: 1997:595007 CAPLUS
DOCUMENT NUMBER: 127:178410
TITLE: Prophosphatrane as stabilizer in thermal stabilization of propellant oxidizer of N,N-dinitramide salts
INVENTOR(S): Russell, Thomas P.; Mishra, Indu B.
PATENT ASSIGNEE(S): United States Dept. of the Navy, USA
SOURCE: U. S. Pat. Appl., 23 pp., Avail. NTIS Order No. PAT-APPL-8-708 001.
CODEN: XAXXAV
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 708001	A0	19970603	US 1996-708001	19960826
US 5780769	A	19980714		

PRIORITY APPLN. INFO.: US 1996-708001 19960826
OTHER SOURCE(S): MARPAT 127:178410

L4 ANSWER 270 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Temp.-controlled gas cell and thin-film laser pyrolysis techniques were used to investigate the condensed-phase thermal decompn. of ammonium dinitramide (ADN). Gas cell expts. were performed at heating rates of 10-2-10-1 .degree.C/s and in a temp. region 20-250.degree.. Pulsed CO2 laser heating of thin ADN films has allowed heating rates of 107 .degree.C/s and temps. of .apprx.630.degree. to be reached. The thermal decompn. products were monitored by FTIR spectroscopy. The primary decompn. products were N2O and NO2, with NO produced at a later stage in the reaction. No evidence was found for participation of dinitramidic acid in the reaction mechanism. The fact that the same initial products were obsd. over a wide range of temps. and heating rates showed that this mechanism can be used to model the initial stages of combustion of ADN.

ACCESSION NUMBER: 1997:575525 CAPLUS
DOCUMENT NUMBER: 127:163972
TITLE: Thermal Decomposition of Ammonium Dinitramide at Moderate and High Temperatures
AUTHOR(S): Vyazovkin, Sergey; Wight, Charles A.
CORPORATE SOURCE: Department of Chemistry, University of Utah, Salt Lake City, UT, 84112, USA
SOURCE: Journal of Physical Chemistry A (1997), 101(39), 7217-7221
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 271 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A series of exptl. studies performed on sandwich propellants, in which a matrix lamina of particulate oxidizer and polymeric binder is sandwiched between two ammonium perchlorate (AP) laminae. The catalyst (ferric oxide) was incorporated in the matrix lamina. The variables are pressure (0.345-6.9 MPa), matrix lamina thickness, catalyst concn., matrix mixt. ratio, types of oxidizer and binder, and the dispersion ability of the catalyst. Near-surface reactions assocd. with the particulate AP/binder contact lines on the burning surface assume significance in the presence of the catalyst. For compns. contg. fine particulate oxidizer matrixes, the catalyst enhances the exothermic reactions at and/or very close to the surface along the oxidizer-binder contact lines. These reactions were further augmented by the presence of the leading-edge portion of the diffusion flame above the interface of the matrix and AP laminae.

ACCESSION NUMBER: 1997:524888 CAPLUS
DOCUMENT NUMBER: 127:178378
TITLE: Mechanism of burning rate enhancement of composite solid propellants by ferric oxide
AUTHOR(S): Chakravarthy, Satyanarayanan R.; Price, Edward W.; Sigman, Robert K.
CORPORATE SOURCE: Georgia Institute of Technology, Atlanta, GA, 30332-0150, USA
SOURCE: Journal of Propulsion and Power (1997), 13(4), 471-480
CODEN: JPPOEL; ISSN: 0748-4658
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 272 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A high-speed photog. study was performed of the rapid deformation of ammonium dinitramide (ADN) and glycidyl azide polymer (GAP) by drop-wt. impact. ADN was more sensitive than ammonium perchlorate. Both materials were suggested as potentially useful oxidizers in explosive and propellant applications. ADN was sensitized by both hard high-m.p. grits (60-.mu.m borosilicate or Pyrex glass) and brittle polymers. High-d. polyethylene suppressed deflagration in this material. Heat-sensitive film was used to confirm that the events seen using high-speed photog. were indeed deflagrations. GAP was insensitive when impacted in this app., even in the presence of additives or gas bubbles.

ACCESSION NUMBER: 1997:524887 CAPLUS
DOCUMENT NUMBER: 127:137821
TITLE: High-speed photographic study of the impact response of ammonium dinitramide and glycidyl azide polymer
AUTHOR(S): Agrawal, J. P.; Walley, S. M.; Field, J. E.
CORPORATE SOURCE: University of Cambridge, Cambridge, CB3 0HE, UK
SOURCE: Journal of Propulsion and Power (1997), 13(4), 463-470
CODEN: JPPOEL; ISSN: 0748-4658
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 273 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ammonium dinitramide (ADN), NH4N(NO2)2, a new energetic compd. was investigated as a potential replacement for NH4NO3 or NH4ClO4 as an oxidizer in solid-fuel rocket propellants. The stability of pure ADN and of mixts. with 2% of different stabilizers was investigated by thermogravimetric analyses (TGA) and differential scanning calorimetry (DSC). The DSC measurement of pure ADN showed melting onset at 91.5.degree. followed by thermal decompn. up to 200.degree.. While the addn. of 2% MgO and NaBO2 showed no effect on the thermal decompn. of ADN, the addn. of the same amt. of urotropin, 2-nitrodiphenylamine, and akardit shifted the onset of ADN thermal decompn. to higher temps.

ACCESSION NUMBER: 1997:522184 CAPLUS
DOCUMENT NUMBER: 127:178385
TITLE: Thermal decomposition and stabilization of ammonium dinitramide (ADN)
AUTHOR(S): Lobbecke, S.; Krause, H.; Pfeil, A.
CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technologie, Pfinztal, D-76318, Germany
SOURCE: International Annual Conference of ICT (1997), 28th(Combustion and Detonation), 112.1-112.8
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 274 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Combustion behavior of ammonium dinitramine (ADN) was studied in the form of both pressed strands and single crystals. Self-sustained combustion of strands pressed into 4 mm i.d. Plexiglas tubes begins at 0.2 MPa. Within the pressure of 0.2-1.5 and 10-36 MPa the combustion process was stable, whereas within the interval of 2-8 the burning rate turned out to be unstable and might vary in more than 2 times at the same pressure. Small amts. of paraffin reduce the low-pressure limit of ADN combustion to the subatmospheric region. The temp. distribution in the ADN combustion wave was measured at 0.1-4.1 MPa. The ADN decompn. reactions in the condensed zone to form NH4NO3 (AN) and N2O play a dominant role in burning at low pressures. The ADN surface temp. corresponds to the temp. of AN dissocn. to yield NH3 and HNO3. Temp. measurements suggest 3-zone flame structure of ADN.

ACCESSION NUMBER: 1997:522174 CAPLUS
DOCUMENT NUMBER: 127:163992
TITLE: Combustion behavior and flame structure of ammonium dinitramide
AUTHOR(S): Fogelzang, Alexander E.; Sinditskii, Valery P.; Egorshev, Viacheslav Y.; Levshenkov, Anton I.; Serushkin, Valery V.; Kolesov, Vasilii I.
CORPORATE SOURCE: Mendeleev Univ. Chemical Technology, Moscow, 125047, Russia
SOURCE: International Annual Conference of ICT (1997), 28th(Combustion and Detonation), 99.1-99.14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 275 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ammonium dinitramide and ammonium nitrate (ADN) thermal decompn. was studied by time-of-flight mass-spectroscopy at .apprx.10-6 and 100 Torr, and 1 atm, and 100-300.degree.. The anal. of the obtained data showed mass-spectra of ADN decompn. products at 1 atm and 100 torr differed significantly from mass-spectra of ADN decompn. products in vacuum, esp. the ratio I46/I17, which was 1.5-1.7 in the first case, whereas in vacuum I46/I17 = 0.06-0.16. The thermal decompn. of ammonium nitrate was carried out at 10-7 Torr. In this case, the reaction products are NH3 and HNO3. With decreasing pressure, the rate of ADN decompn. increased and HNO3 mole fraction in the decompn. products decreased. The reason is that the process of ADN dissociative sublimation into NH3 and nitronitramide [HN(NO2)2], followed by decompn. of the latter to give N2O, NO, and H2O, became dominant with decreasing pressure.

ACCESSION NUMBER: 1997:522128 CAPLUS
DOCUMENT NUMBER: 127:207727
TITLE: Thermal decomposition of ammonium dinitramide and ammonium nitrate
AUTHOR(S): Korobeinichev, Oleg; Shmakov, Andrey; Paletsky, Alexander
CORPORATE SOURCE: Siberian Branch, Inst. Chemical Kinetics Combustion, Novosibirsk, 630090, Russia
SOURCE: International Annual Conference of ICT (1997), 28th(Combustion and Detonation), 41.1-41.11
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 276 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Data on the optical combustion properties of ammonium dinitramide (ADN) systems as powerful oxidants for propellants and explosives are given from expts. using ADN mixed with paraffin in a mass ratio of 90:10 corresponding to a max. specific impulse. Burning rates of 50 mm/s were measured at 7 MPa and a pressure exponent of 0.8 was detd. Spectroscopic investigations yield to flame temps. in the range of the adiabatic flame temp. of 2960 K and give first hints to the chem. reaction mechanism of the ADN combustion with hydrocarbons.

ACCESSION NUMBER: 1997:522099 CAPLUS
DOCUMENT NUMBER: 127:163977
TITLE: Burning behavior of ADN-mixtures
AUTHOR(S): Weiser, Volker; Eisenreich, Norbert; Bayer, Andrea; Weindel, Martin; >Menke, Klaus
CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technologie, Pfinztal, D-76318, Germany
SOURCE: International Annual Conference of ICT (1997), 28th(Combustion and Detonation), 8.1-8.14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: German

L4 ANSWER 277 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review, with 21 refs., of synthetic methods, structure, and physicochem. and chem. properties of dinitramide [HN(NO2)2] and its salts with mono- and divalent metals of Groups I, II, VII, and VIII of the Periodic Table, as well as nitrogen bases (ammonia, hydrazine, hydroxylamine, primary, secondary, and tertiary amines, quaternary aliph. amines, amidines, guanidines, etc.).

ACCESSION NUMBER: 1997:502383 CAPLUS
DOCUMENT NUMBER: 127:207705
TITLE: Chemistry of dinitramine and its salts
AUTHOR(S): Luk'yanov, O. A.; Tartakovskii, V. A.
CORPORATE SOURCE: Insr. Org. Khim.im. Zelinskogo, Russian Academy Sciences, Russia
SOURCE: Rossiiskii Khimicheskii Zhurnal (1997), 41(2), 5-13
CODEN: RKZHEZ; ISSN: 1024-6215
PUBLISHER: Rossiiskoe Khimicheskoe Obshchestvo im. D. I. Mendeleeva
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Russian

L4 ANSWER 278 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Thermal properties and decompn. behavior of the new energetic material ammonium dinitramide (ADN) were investigated. Thermal decompn. of ADN is obsd. after complete melting at 91.5.degree.. The main decompn. pathway is based on the formation of NH4NO3 and N2O followed by the thermal decompn. of NH4NO3 to N2O and H2O at higher temps. Side reactions forming NO2, NO, NH3, N2, and 02 are described and a mechanism for the acid-catalyzed decompn. of hydrogen dinitramide, dissocn. product of ADN, is proposed.

ACCESSION NUMBER: 1997:501965 CAPLUS
DOCUMENT NUMBER: 127:178384
TITLE: Thermal analysis of ammonium dinitramide decomposition
AUTHOR(S): Lobbecke, Stefan; Krause, Horst H.; Pfeil, Achim
CORPORATE SOURCE: Fraunhofer-Institut Chemische Technologie, Pfinztal-Berghausen, D-76327, Germany
SOURCE: Propellants, Explosives, Pyrotechnics (1997), 22(3), 184-188
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: Wiley-VCH
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 279 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Dinitramide salts of ammonia (ADN), hexamethylenetetramine (HDN), potassium (KDN), and sodium (NaDN) showed a linear relationship between the differential scanning calorimetry (DSC) rate of decompn. at the peak max. and the dielec. loss (tan.delta.) values at the low-temp. transition peak. As the cation basicity increased, in the series ADN < HDN < KDN .ltoreq. NaDN, increases in the low-temp. transition peak, the energy barrier for relaxation, and the decompn. peak temp. were obsd., and a decrease in the tan.delta. value at the low-temp. transition peak, sp. heat capacity, and the rate and enthalpy of decompn. The more basic salts were more thermally stable (i.e., higher decompn. temp.) and less energetic (i.e., lower enthalpy of decompn.). The more internal free vol. (disorder) present in these salts, the higher the rates of relaxation and decompn. Five Al powders of different surface areas were analyzed by DSC in platinum sample pans; the enthalpy and rate of oxidn. increased as the particle size of Al decreased, and the enthalpy of the Al melt decreased. Thermogravimetric (TG) anal. showed a two-step wt. gain in the oxidn. of Al, with plateaus in the 650 and 1130.degree. regions; the percent wt. gain increased as the particle size of Al decreased. Variable DSC and TG heating rate studies showed that the activation energies for the first step in the oxidn. process increased with increasing particle size of the Al.

ACCESSION NUMBER: 1997:483697 CAPLUS
DOCUMENT NUMBER: 127:192630
TITLE: Low/high temperature relationships in dinitramide salts by DEA/DSC and study of oxidation of aluminum powders by DSC/TG
AUTHOR(S): Tompa, A. S.; Boswell, R. F.; Skahan, P.; Gotzmer, C.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640, USA
SOURCE: Journal of Thermal Analysis (1997), 49(3), 1161-1170
CODEN: JTHEA9; ISSN: 0368-4466
PUBLISHER: Akademiai Kiado
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 280 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal decompn. of ammonium dinitramide (ADN) and potassium dinitramide (KDN) were examd. neat and in soln. Isothermal kinetics were measured (160-220 .degree.C) by monitoring dinitramidate loss and were found to be first-order. Ammonium ion loss and gas formation were not good measurements of ADN decompn. since they reflect the fate of the ADN decompn. product ammonium nitrate. Kinetics of decompn. were nearly identical for ADN neat (proteo- and deutero-), ADN in water (1 or 20 wt.%), ADN in various pH aq. buffers, and for aq. KDN (1 wt.% in water or deuterium oxide). The activation energy, calcd. for ADN, was about 40 kcal/mol (167 kJ/mol) for neat ADN and 37 kcal/mol (155 kJ/mol) for aq. solns. of ADN. Decompn. of ADN in aq. buffers suggested that under the conditions of these studies decompn. of dinitramidate or its parent acid proceeds at about the same rate at pH 3, pH 5, and unbuffered but decreased by about 40% at pH 9. Neat KDN was unique in that it decompd. about an order of magnitude slower than ADN, but its decompn. increased to be comparable to that of ADN when KDN was aq. or when any ammonium salt was mixed with KDN. Nitrous oxide and nitrate (or nitric acid) were the principal decompn. products of dinitramide. Nitrogen gas was also formed, to a significant extent in the decompn. of ADN and to a small extent in that of KDN. Nitrogen gas resulted from the interaction of ammonium or ammonia with the nitrate or gaseous nitrogen oxides. Studies of 15N-labeled ADN confirm that one N-NO2 bond remains intact, forming nitrous oxide, while the other nitro group combines with the nitrogen from ammonium to form nitrogen gas. Several decompn. pathways consistent with these findings are considered.

ACCESSION NUMBER: 1997:440273 CAPLUS
DOCUMENT NUMBER: 127:141230
TITLE: Thermal Decomposition Studies on Ammonium Dinitramide (ADN) and 15N and 2H Isotopomers
AUTHOR(S): Oxley, J. C.; Smith, J. L.; Zheng, W.; Rogers, E.; Coburn, M. D.
CORPORATE SOURCE: Chemistry Department, University of Rhode Island, Kingston, DE, 02881, USA
SOURCE: Journal of Physical Chemistry A (1997), 101(31), 5646-5652
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 281 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Thermal decompn. of ammonium dinitramide (ADN) has been studied by differential scanning calorimetry (DSC) and thermal gravimetry combined with mass spectrometry (TG-MS). ADN decomps. in the range 130-230.degree. The global activation energy detd. from TG expts. decreases from 175 .+-. 20 kJ mol-1 at the beginning of the reaction to 125 .+-. 20 kJ mol-1 when the reaction is near completion. Expts. conducted at different carrier gas flow rates indicate that the reaction is catalyzed by product gases released during the reaction. A condensed phase ionic reaction mechanism is proposed, in which ammonium nitrate and ammonium mononitramide (NH4NNO2) are formed as intermediates in two competing channels.

ACCESSION NUMBER: 1997:440148 CAPLUS
DOCUMENT NUMBER: 127:53016
TITLE: Ammonium Dinitramide: Kinetics and Mechanism of Thermal Decomposition
AUTHOR(S): Vyazovkin, Sergey; Wight, Charles A.
CORPORATE SOURCE: Department of Chemistry, University of Utah, Salt Lake City, UT, 84112, USA
SOURCE: Journal of Physical Chemistry A (1997), 101(31), 5653-5658
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 282 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Three biguanidinium salts of the energetic dinitramide anion were prepd. and structurally characterized from room-temp. x-ray diffraction data. Biguanidinium mono-dinitramide, (BIGH)(DN), is triclinic, space group P.hivin.1, a 4.3686(4), b 9.404(2), c 10.742(1) .ANG., .alpha. 83.54(1), .beta. 80.386(9), .gamma. 79.93(1).degree., Z = 2, dc = 1.62, R = 0.041. Biguanidinium bis-dinitramide, (BIGH2)(DN)2, is monoclinic, space group C2/c, a 11.892(2), b 8.131(1), c 13.038(2) .ANG., .beta. 115.79(1).degree., Z = 4, dc = 1.844, R = 0.0533. Biguanidinium bis-dinitramide monohydrate, (BIGH2)(DN)2.H2O, is orthorhombic, space group P212121, a 6.4201(6), b 13.408(1), c 14.584(2) .ANG., Z = 4, dc = 1.76, R = 0.040. At. coordinates are given. All three structures were characterized by extensive H bonding. Both the mono- and diprotonated cations consist of two planar halves twisted with respect to each other; The dinitramide anion has a surprisingly variable and asym. structure. The two halves of the anion are twisted with respect to each other; however, the twist varies from 5.1 to 28.9.degree.. The two ends of the anion have significantly different geometries, e.g. the 'equiv.' N-N bond lengths differ by up to 0.045 .ANG..

ACCESSION NUMBER: 1997:411189 CAPLUS
DOCUMENT NUMBER: 127:143091
TITLE: Energetic materials: the preparation and structural characterization of three biguanidinium dinitramides
AUTHOR(S): Martin, Anthony; Pinkerton, A. Alan; Gilardi, Richard D.; Bottaro, Jeffrey C.
CORPORATE SOURCE: Dep. Chem., Univ. Toledo, Toledo, OH, 43606, USA
SOURCE: Acta Crystallographica, Section B: Structural Science (1997), B53(3), 504-512
CODEN: ASBSDK; ISSN: 0108-7681
PUBLISHER: Munksgaard
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 283 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Thermodn. calcns. were done for emulsion explosive systems contg. energy-supplying additives (e.g., gunpowder, NH4 dinitramide). The additives had a pos. effect on the explosive systems. A NH4NO3-water-gunpowder-Al mixt. provided a detonation rate of >7000 m/s and detonation pressure of .apprx.18 GPa. Substitution of NH4NO3 with NH4 dinitramide in the NH4NO3-water-satd. hydrocarbon-oleic acid system and substitution of glass microspheres with gunpowder increased brisance of the emulsion explosives by .gtoreq.60%.

ACCESSION NUMBER: 1997:391665 CAPLUS
DOCUMENT NUMBER: 127:150723
TITLE: Improvement of commercial emulsion explosives using conversion components
AUTHOR(S): Odintsov, V. V.; Pepekin, V. I.; Korsunskii, B. L.
CORPORATE SOURCE: Inst. Khi. Fiz. im. N. N. Semenova, RAN, Moscow, Russia
SOURCE: Khimicheskaya Fizika (1997), 16(4), 94-105
CODEN: KHFID9; ISSN: 0207-401X
PUBLISHER: Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 284 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Binder interactions were simulated for cryst. ADN (ammonium dinitramide) using five general binder structures: polyethylene oxide, polybutadiene, several hexamethylene-based carbamates, an octamer of polydimethylsiloxane, and a proprietary complex ester-nitramine binder. A mol. stress-dynamics technique was used to compare the relative energy requirements needed to force apart the minimized binder-ADN pairs, showing differences in the energy trajectories. This technique as well as the results and anal. of the model was discussed. ADN showed the highest interaction energies between those polymers with the highest heteroatom and multiple bonding contents, as interpreted from the stiffness and strength definitions of the energy trajectories. Interpretation of mol. structure-to-interaction energies was not straight-forward.

ACCESSION NUMBER: 1997:375424 CAPLUS
DOCUMENT NUMBER: 127:53017
TITLE: Molecular dynamics of binder-ADN interaction
AUTHOR(S): Iwamoto, N.
CORPORATE SOURCE: Weapons Division, Naval Air Warfare Center, China Lake, CA, 93555-6001, USA
SOURCE: Proceedings of the ERDEC Scientific Conference on Chemical and Biological Defense Research, Aberdeen Proving Ground, Md., Nov. 15-18, 1994 (1996), Meeting Date 1994, 493-500. Editor(s): Berg, Dorothy A. National Technical Information Service: Springfield, Va.
CODEN: 64NAAX
DOCUMENT TYPE: Conference
LANGUAGE: English

L4 ANSWER 285 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal decompn. of 1,3,3-trinitroazetidine (TNAZ) and related 3,3-dinitroazetidium (DNAZ+) salts was exam. neat and in soln. TNAZ kinetics were found (160-250 .degree.C) to be first-order and nearly identical neat and in benzene, with an activation energy of 46.6 kcal/mol (195 kJ/mol). The DNAZ+ salts were less thermally stable than TNAZ, and neat did not decomp. in a first-order fashion. However, in aq. soln. the DNAZ+ salts did decomp. following first-order kinetics; their rates were similar with minor differences apparently related to the strength of the anion as a conjugate base. Like simple nitramines such as dimethylnitramine, TNAZ tended to form N2O rather than N2, but unlike other nitramines it formed about as much NO as N2O. TNAZ isotopomers labeled with 13C and with 15N were prepd. and used to identify the origin of the decompn. gases and the identity of the condensed-phase products. Early in the decompn. of TNAZ, most of the NO came from the nitro group attached to the azetidium ring nitrogen. Most of the N2O was the result of the nitro groups interacting with each other, while the majority of the N2 contained one nitrogen from the ring. Many condensed products have been identified, but five stand out because they are formed in the thermolysis of TNAZ and the three DNAZ+ salts [NO3-, Cl-, N(NO2)2-]. These are 3,5-dinitropyridine (M, always a minor product), 1-formyl-3,3-dinitroazetidine (L), 1,3-dinitroazetidine (K), 1-nitroso-3,3-dinitroazetidine (E), and 1-nitroso-3-nitroazetidine (G); the identity of the first four has been confirmed by use of authentic samples. Of these five, the last four have been shown to interconvert with TNAZ and each other under the conditions of these expts. This study confirms the presence of two competitive TNAZ decompn. pathways. Under the conditions of this study, N-NO2 homolysis is slightly favored, but products, such as K, resulting from C-NO2 scission, are also well represented.

ACCESSION NUMBER: 1997:332787 CAPLUS
DOCUMENT NUMBER: 127:50227
TITLE: Thermal Decomposition Pathways of 1,3,3-Trinitroazetidine (TNAZ), Related 3,3-Dinitroazetidium Salts, and 15N, 13C, and 2H Isotopomers
AUTHOR(S): Oxley, Jimmie; Smith, James; Zheng, Weiyi; Rogers, Evan; Coburn, Michael
CORPORATE SOURCE: Department of Chemistry, University of Rhode Island, Kingston, RI, 02881-0809, USA
SOURCE: Journal of Physical Chemistry A (1997), 101(24), 4375-4383
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 286 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ammonium dinitramide (ADN), a potential rocket fuel, decomps. in water forming NO2. The chem. of this ADN-released NO2 in oxygenated biol. systems is complex both in the no. of potential chem. species and in the no. of parallel and consecutive reactions that can theor. occur. High-pressure liq. chromatog. (HPLC) studies revealed ADN fragmented DNA. Damage to DNA std. solns. was caused by at least two major pathways, one arising from reactions of NO2 with oxygen and one arising from a reaction with superoxide. The radical species generated when ADN is incubated with std. solns. of DNA, pH 7.5, in the presence of the spin trap agent n-tert-butyl-.alpha.-nitrone (PBN) was compared with the PBN-radical adducts generated in the presence of ADN and superoxide of ADN and hydrogen peroxide (H2O2). The ADN-induced PBN radical adducts increased linearly over the 90-min study period. The values of peak intensity in the presence of superoxide in the presence of H2O2, were 82% and 7.0%, resp., of the ADN-induced radicals alone. The synergistic effects of ADN with superoxide may provide an understanding of the sensitivity of the rat blastocyst to ADN at the preimplantation stage of development and the lack of toxicity in in vivo studies in tissues high in catalase.

ACCESSION NUMBER: 1997:325851 CAPLUS
DOCUMENT NUMBER: 126:302438
TITLE: Effects of reactive oxygen and nitrogen species induced by ammonium dinitramide decomposition in aqueous solutions of deoxyribose nucleic acid
AUTHOR(S): Steel-Goodwin, Linda; Kuhlman, K. J.; Miller, Clay; Pace, M. D.; Carmichael, A. J.
CORPORATE SOURCE: Tri-Service Toxicology, Armstrong Laboratory, Wright-Patterson AFB, OH, 45433, USA
SOURCE: Annals of Clinical and Laboratory Science (1997), 27(3), 236-245
CODEN: ACLSCP; ISSN: 0091-7370
PUBLISHER: Institute for Clinical Science
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 287 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The pressure/temp. and reaction phase diagram for dinitro azetidinium dinitramide (DNAZ-DN) has been delineated using a high-pressure diamond anvil cell with Fourier transform IR spectroscopy, Raman spectroscopy, and optical polarizing light microscopy. The phase diagram was detd. between ambient pressure and 10.0 GPa over the temp. range from -75 .degree.C to decompn. temps. or >150 .degree.C. The phase diagram delineates the melt curve for .alpha.-DNAZ-DN, a reversible phase transformation in .alpha.-DNAZ-DN forming a new high-pressure polymorph, .beta.-DNAZ-DN, and also identifies the pressure and temp. conditions for solid state decompn. of .beta.-DNAZ-DN. FTIR and Raman spectra were obtained for both the .alpha. and .beta. phases as a function of pressure at room temp. The new high-pressure .beta. polymorph could not be retrieved to ambient conditions.

ACCESSION NUMBER: 1997:247910 CAPLUS
DOCUMENT NUMBER: 126:277147
TITLE: Pressure/Temperature and Reaction Phase Diagram for Dinitroazetidinium Dinitramide
AUTHOR(S): Russell, T. P.; Piermarini, G. J.; Miller, P. J.
CORPORATE SOURCE: Chemistry Division, Naval Research Laboratory, Washington, DC, 20375, USA
SOURCE: Journal of Physical Chemistry B (1997), 101(18), 3566-3570
CODEN: JPCBFK; ISSN: 1089-5647
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 288 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Laser-supported deflagration of ADN, AP, HNF, TNAZ, RDX, or HMX in sandwich configurations with various energetic and nonenergetic binders was studied. Planar laser-induced fluorescence (PLIF) was used to measure the two-dimensional NH, OH, and CN species profiles for these sandwiches. For the HNF sandwiches, obvious diffusion flames were present at low pressure, but they were weak, further from the surface than the HNF monopropellant flame, and not expected to be burn-rate controlling. ADN was found to have diffusion flames with energetic binders at low pressures, but they were very far from the surface. The high burn rate of ADN at pressures above 3 atm left the binder behind, and the diffusion flames became weak. AP showed clear evidence for strong close diffusion flames with binders and even with other oxidizers. The combination of HMX or TNAZ with AP leads to obvious diffusion flame interactions: the highly reactive AP-decompn. products accelerated the nitramine dark zone kinetics and caused the secondary flame to hold on the interface region. This leads to higher heat feedback in the interface region and a somewhat faster nitramine regression rate. TNAZ, RDX, and HMX were not found to have any diffusion flames with energetic or nonenergetic binders: the monopropellant flame was lifted in the region around the binder. These results imply that ADN, HNF, TNAZ, RDX, and HMX propellants will not have the clear particle size ballistic tailorability seen with AP propellants, because diffusion flames appear to be strong and close to the surface (and therefore burn-rate controlling) only in AP propellants.

ACCESSION NUMBER: 1997:246520 CAPLUS
DOCUMENT NUMBER: 126:295264
TITLE: Solid propellant diffusion flame structure
AUTHOR(S): Parr, T. P.; Hanson-Parr, D. M.
CORPORATE SOURCE: Combustion Diagnostics Laboratory, Research Division, Naval Air Warfare Center, China Lake, CA, 93555-6100, USA
SOURCE: Symposium (International) on Combustion, [Proceedings] (1996), 26th(Vol. 2), 1981-1987
CODEN: SYMCAQ; ISSN: 0082-0784
PUBLISHER: Combustion Institute
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 289 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Dinitramidic acid HN(NO2)2 is manufd. by nitration of a compd. selected from NH2NO2, NH4NH2CO2, NH2SO3H, NH(SO3H)2, N(SO3H)3, and its salts with metal cations or org. cations, e.g. NH(SO3NH4)2, and the salts having the formula M+n(-N(NO2)2)n where M is a metal cation or a nitrogen-contg. cation and n = 1-3 are manufd. by neutralization of dinitramidic acid with a neutralizing agent, e.g. ammonia. The salt mixt. formed in the neutralization is passed through a column contg. an adsorbing agent which adsorbs the dinitramide salt and the dinitramide salt is eluted with an elution agent consisting of hot water and/or a polar org. solvent. is selected from a class consisting of activated carbon, silica gel and zeolites. The org. solvent. is selected from acetone, acetonitrile, 2-propanol and other lower alcs. and their mixts. and the adsorbing agent is selected from activated carbon, silica gel and zeolites. The dinitramide salts can be used as oxidizers in solid propellants.

ACCESSION NUMBER: 1997:238400 CAPLUS
DOCUMENT NUMBER: 126:227269
TITLE: Manufacture of dinitramidic acid and its salts for solid propellants
INVENTOR(S): Langlet, Abraham; Oestmark, Henric; Wingborg, Niklas
PATENT ASSIGNEE(S): Foersvarets Forskningsanstalt, Swed.; Langlet, Abraham; Oestmark, Henric; Wingborg, Niklas
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9706099	A1	19970220	WO 1996-SE976	19960726
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM				
SE 9503326	A	19970209	SE 1995-3326	19950926
SE 516719	C2	20020219		
CA 2227625	AA	19970220	CA 1996-2227625	19960726
AU 9665396	A1	19970305	AU 1996-65396	19960726
AU 703767	B2	19990401		
EP 843647	A1	19980527	EP 1996-925240	19960726
EP 843647	B1	20010411		
R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL, SE, PT, IE, FI				
BR 9609993	A	19990706	BR 1996-9993	19960726
JP 11514323	T2	19991207	JP 1996-508366	19960726
IL 122880	A1	20001031	IL 1996-122880	19960726
AT 200470	E	20010415	AT 1996-925240	19960726
ES 2159039	T3	20010916	ES 1996-925240	19960726
US 5976483	A	19991102	US 1998-983462	19980113
NO 9800534	A	19980206	NO 1998-534	19980206

PRIORITY APPLN. INFO.: SE 1995-2783 A 19950808
SE 1995-3326 A 19950926
WO 1996-SE976 W 19960726

L4 ANSWER 290 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The development of new energetic materials was presented for such materials as composite propellants contg. butacene, glycidyl azide polymer (GAP), CL-20, ammonium dinitramide (ADN), and NTO. The document is based on the Proceedings of the 27th International Annual ICT Conference.

ACCESSION NUMBER: 1997:219416 CAPLUS
DOCUMENT NUMBER: 126:265934
TITLE: New developments of energetic materials outside China
AUTHOR(S): Li, Shangwen; Zhao, Fengqi
CORPORATE SOURCE: Xi'an Modern Chemistry Res. Inst., Xi'an, 710065, Peop. Rep. China
SOURCE: Binggong Xuebao, Huohuangong Fence (1997), 19(1), 63-64
CODEN: BXHFFP; ISSN: 1004-9193
PUBLISHER: Zhongguo Bingqi Gongye Di-204 Yanjiuso
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

L4 ANSWER 291 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In this novel nitration method, dinitrogen pentoxide (N2O5) in an inert solvent is used as the nitrating agent, thereby removing the need for strong acids as the reaction medium. The N2O5 cleaves heteroatom-silicon bonds, in silylamines and silyl ethers resp., to yield the desired energetic groupings (nitramines or nitrate esters, resp.) without liberation of acids which would occur with conventional substrates (amines or alcs.). These nitrodesilylation reactions proceed cleanly and in good yield, and the scope of the reaction is illustrated by 29 examples, some of which produce high energy compds., notably plasticizers and an energetic polymer precursor. These reactions are therefore potentially clean nitrations for the manuf. of energetic compds.

ACCESSION NUMBER: 1997:216243 CAPLUS
DOCUMENT NUMBER: 126:292895
TITLE: Nitration by oxides of nitrogen. 10. Clean nitrations: novel syntheses of nitramines and nitrate esters by nitrodesilylation reactions using dinitrogen pentoxide (N2O5)
AUTHOR(S): Millar, Ross W.; Philbin, Simon P.
CORPORATE SOURCE: Defence Research Agency, Fort Halstead, Sevenoaks, Kent, TN14 7BP, UK
SOURCE: Tetrahedron (1997), 53(12), 4371-4386
CODEN: TETRAB; ISSN: 0040-4020
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 126:292895

L4 ANSWER 292 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The mechanism of thermal decompn. of ammonium dinitramide (ADN), a new Cl-free energetic oxidizer of solid rocket propellant, was investigated by TG, DTA, and MS (mass spectroscopy). The DTA/TG data exhibited an activation energy 110 kJ/mol in the initial stage and 150 in the terminal stage. Based on the MS data, ADN evolved NO2, NH2OH, NH, NH2, NH3, and NH4 after fusion at 92.degree.. These products were assumed to be oxidn./redn. products of radicals in a condensed phase.

ACCESSION NUMBER: 1997:203238 CAPLUS
DOCUMENT NUMBER: 126:332217
TITLE: Thermal decomposition characteristics of ammonium dinitramide. I
AUTHOR(S): Takishita, Yukio; Teramoto, Yasuhiro
CORPORATE SOURCE: TRDI, Japan Def. Agency, Tachikawa, 190, Japan
SOURCE: Kayaku Gakkaishi (1997), 58(1), 23-28
CODEN: KAGAEA; ISSN: 1340-2781
PUBLISHER: Kayaku Gakkai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

L4 ANSWER 293 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The process comprises (1) reacting urea with dil. HNO3 to obtain urea nitrate, (2) reacting the urea nitrate with H2SO4 to obtain nitrourea, (3) reacting the nitrourea with a nitrating agent, e.g., nitronium tetrafluoroborate, and adding NH3 to the reaction mixt., (4) filtering the byproduct crystal, and concg. the filtrate, (5) adding Et nitrate to the concd. filtrate and filtering to remove the ppts., and (6) concg. the filtrate and adding chloroform to ppt. ADN. The ADN is used as an oxidizing agent for solid propellants.

ACCESSION NUMBER: 1997:145017 CAPLUS
DOCUMENT NUMBER: 126:159395
TITLE: Manufacture of ammonium dinitramide (ADN) useful as oxidizing agent
INVENTOR(S): Suzuki, Shigeru; Myazaki, Shigefumi; Hatano, Hideo; Shiino, Kazuo; Onda, Toshio
PATENT ASSIGNEE(S): Nissan Motor, Japan; Hosoya Fireworks
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08325005	A2	19961210	JP 1995-152218	19950526
US 5659080	A	19970819	US 1996-653833	19960528
PRIORITY APPLN. INFO.:			JP 1995-152218	19950526

L4 ANSWER 294 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A new application of ESR spin trapping is described using the nitromethane aci anion (CH2:NO2-) spin trapping technique for quant. measurement of nitrogen dioxide radicals (.bul.NO2) and nitrite ions (NO2-) in strong alk. aq. soln. The relative concn. of a spin adduct radical, dinitromethyl dianion radical [-O2N-CH:NO2.bul.-] (I), produced by UV photolysis, is shown to be proportional to the concn. of NO2- dissolved in alk. soln. This method is applied to est. the .bul.NO2 concns. produced by decompn. of two energetic nitramine compds.: cyclotrimethylenetrinitramine, C6H6N6O6 (RDX), and ammonium dinitramide, NH4+N(NO2)2- (ADN), by using calibration plots of the spin concn. of I vs. time of photolysis. Calibrations were prepd. using sodium nitrite (NaNO2) or ammonium nitrate (NH4NO3) which behave similarly to the energetic compds. with respect to formation of I.

ACCESSION NUMBER: 1997:140756 CAPLUS
DOCUMENT NUMBER: 126:133212
TITLE: Quantitative EPR Spin Trapping. 1. Nitrogen Dioxide Radicals and Nitrite Ions from Energetic Materials in Alkaline Aqueous Solution
AUTHOR(S): Pace, M. D.; Carmichael, A. J.
CORPORATE SOURCE: Naval Research Laboratory, Washington, DC, 20375-5342, USA
SOURCE: Journal of Physical Chemistry A (1997), 101(10), 1848-1853
CODEN: JPCAFH; ISSN: 1089-5639
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 295 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The 4 types of mixts. consisting of the 2 bases (aq. solns. of ammonium nitrate and ammonium dinitramide) and the 2 addns. (hollow glass microballoons and gunpowder) were considered. Based on thermodn. computations of an ideal detonation and accompanying process (shock and rarefaction waves) there were obtained not only the dependences of detonation parameters on addn. quantities to mixts., but the pressure vs. particle velocity diagrams, which, in comparison with Hugoniots relatively soft (water) and hard (aluminum) substances, could be used to det. values of pressure in the shock waves being produced in surroundings nearby the end-wall and lateral surface of a charge. The brisant effect of an explosive was characterized by a value of relative brisance which was calcd. as percentage ratio of pressures of shock waves generated in surroundings under the same conditions by detonation products of the given explosive and the std. one. The brisant effect of the new emulsion explosives was comparable and could even exceed that of TNT of maximal d. The brisant ability of industrial emulsion explosives could be increased by .gtoreq.60% by replacing ammonium nitrate with ammonium dinitramide and hollow glass microballoons with powders obtained from military conversion and utilization of spent munitions.

ACCESSION NUMBER: 1997:76674 CAPLUS
DOCUMENT NUMBER: 126:188072
TITLE: Comparative brisant characteristics of some classes of industrial emulsion explosives
AUTHOR(S): Odintsov, Victor V.; Pepekin, Vitaly I.
CORPORATE SOURCE: Inst. Chem. Phys., Russian Academy Science, Moscow, 117977, Russia
SOURCE: Propellants, Explosives, Pyrotechnics (1996), 21(6), 295-302
CODEN: PEPYD5; ISSN: 0721-3115
PUBLISHER: VCH
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 296 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review, with 3 tables, 4 figures, and 4 refs., on ADN (ammonium dinitramide), a new promising candidate oxidizer for the next generation low-signature propellants. ADN may either fully or partially replace ammonium perchlorate as an oxidizer in propellant formulations without greatly sacrificing propellant performance, even at reduced metal loadings. More importantly, the quantity of HCl in the exhaust gas can be eliminated or substantially reduced.

ACCESSION NUMBER: 1997:59341 CAPLUS
DOCUMENT NUMBER: 126:106103
TITLE: ADN, a new candidate oxidizer for the next generation propellants
AUTHOR(S): Zhag, Haiyan; Chen, Hong; Wang, Guoqiang
CORPORATE SOURCE: Xi'an Modern Chemistry Res. Inst., Xi'an, 710065, Peop. Rep. China
SOURCE: Theory and Practice of Energetic Materials, [Proceedings of the International Autumn Seminar on Propellants, Explosives and Pyrotechnics], Beijing, Oct. 7-10, 1996 (1996), 127-132. Editor(s): Feng, Changgen; Ou, Yuxiang; Zeng, Qingxuan. Beijing Institute of Technology Press: Beijing, Peop. Rep. China.
CODEN: 63WYA7
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English

L4 ANSWER 297 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review, with 4 refs., on the synthesis of dinitroamide salts and their properties and applications. Synthetic methods discussed include: (1) reaction of .beta.-substituted-N-alkyl-N,N-dinitroamides with metal hydroxides, (2) cation exchange of dinitroamide salts, (3) reaction of ADN (ammonium dinitramide) with aq. strong base, (4) reaction of XN(NO2)2 with NH3, (5) reaction of urethanes with org. anhydrides, HNO3, and base to yield N-(alkoxycarbonyl)-N-nitroamide salts, followed by reaction with a nitronium compd., (6) reacting nitramides with a nitrating agent to yield dinitramides, (7) reaction of an aliph. isocyanate with NO2BF4 and HNO3 to form N,N-dinitramines, which are further reacted with a base or a salt to form dinitramides, (8) reaction of ammonium carbamate with a nitrating agent, (9) reaction of NH3 with nitronium compds., and (10) reaction of 2-(trimethylsilylethyl)-N,N-dinitramines with CsF to form Cs dinitramide. Among the above 10 methods, methods 5, 6, and 10 have high yields; the other methods have lower (<30%) yields. In addn. to being used as potential oxidizers in rocket propellants, dinitroamide salts also have application as reagents for specialized org. synthesis.

ACCESSION NUMBER: 1997:59337 CAPLUS
DOCUMENT NUMBER: 126:106102
TITLE: Synthesis of novel oxidizer dinitroamide salts
AUTHOR(S): Wang, Guoqiang; Chen, Hong; Zhang, Haiyan; Ma, Yuanying
CORPORATE SOURCE: Xi'an Modern Chemistry Res. Inst., Xi'an, 710065, Peop. Rep. China
SOURCE: Theory and Practice of Energetic Materials, [Proceedings of the International Autumn Seminar on Propellants, Explosives and Pyrotechnics], Beijing, Oct. 7-10, 1996 (1996), 85-91. Editor(s): Feng, Changgen; Ou, Yuxiang; Zeng, Qingxuan. Beijing Institute of Technology Press: Beijing, Peop. Rep. China.
CODEN: 63WYA7
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English

L4 ANSWER 298 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB High-solid pressable explosive compns. comprise 1-9 wt.% liq. energetic polymer and 91-99 wt.% high-performance solid explosive oxidizer. The energetic polymer has a wt. av. mol. wt. >10,000 detd. using a polystyrene std., and the preferred energetic polymer is chain-extended (polyglycidyl nitrate). The pressable explosives produce extremely high-detonation pressure, high-detonation velocity, and excellent metal accelerating capability.

ACCESSION NUMBER: 1997:27082 CAPLUS
DOCUMENT NUMBER: 126:91603
TITLE: High-performance pressable explosive compositions
INVENTOR(S): Braithwaite, Paul C.; Lund, Gary K.; Wardle, Robert B.
PATENT ASSIGNEE(S): Thiokol Corporation, USA
SOURCE: U.S., 6 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5587553	A	19961224	US 1994-335097	19941107
GB 2307906	A1	19970611	GB 1995-24749	19951204
GB 2307906	B2	20000223		
DE 19549157	A1	19970703	DE 1995-19549157	19951228

PRIORITY APPLN. INFO.: US 1994-335097 19941107

L4 ANSWER 299 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A systematic measurement of dielec. relaxation at frequency 10-400 mHz was carried out on natural rubber and chloroprene rubber contg. small amt. of nitroaniline. Three absorption regions were obsd. in the dielec. loss (e") with frequency plots. The first absorption region in the lower-frequency range was attributed to the Maxwell-Wagner effect. The second absorption region was attributed to aniline additives, remained nearly the same for natural rubber and decreased in intensity as the amt. of aniline increased, in chloroprene rubber. The third region is assocd. with Debye losses and is also nearly the same for natural rubber samples, while it decreases on addn. of aniline derivs. to chloroprene rubber; this decrease is attributed to peptizing effects of aniline derivs. An aged chloroprene rubber gum was treated with nitroanilines and the mech. and elec. properties improved and approached those of fresh rubber.

ACCESSION NUMBER: 1996:608767 CAPLUS
DOCUMENT NUMBER: 125:250138
TITLE: Dielectric relaxation and mechanical properties of natural and chloroprene rubber with nitroaniline and peroxide additives
AUTHOR(S): Abd-El-Messieh, S. L.; Younan, A. F.
CORPORATE SOURCE: Microwave Phys. Dep., National Res. Center, Cairo, Egypt
SOURCE: Journal of Applied Polymer Science (1996), 62(5), 805-812
CODEN: JAPNAB; ISSN: 0021-8995
PUBLISHER: Wiley
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 300 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Ammonium dinitramide [NH4N(NO2)2; ADN], useful for an excellent oxidizer for high performance solid propellants, was obtained by a new synthetic method which employed urea as a starting substance and acquired nitrourea as an intermediate product in yield .apprx.15% (based on the amt. of nitrourea). The phys. properties of ADN were detd. The hygroscopicity of ADN was slightly higher than that of ammonium nitrate. So, it was recommended to handle ADN at 50% of relative humidity or below. Moreover, ignition temp., drop hammer test, friction test, and electrostatic spark test were carried out on 4 types of ADN crystals. As the result, it was found out that a powd. and a prismatic types of ADN were more insensitive than that of a coagulated and a needle types.

ACCESSION NUMBER: 1996:560008 CAPLUS
DOCUMENT NUMBER: 125:225920
TITLE: New synthetic method and properties of ammonium dinitramide
AUTHOR(S): Hatano, Hideo; Onda, Toshio; Shino, Kazuo; Miyazaki, Shigefumi; Matsuura, Shin
CORPORATE SOURCE: Technol. Dev. Cent., Hosoya Kako Co. Ltd., Akiruno, 197, Japan
SOURCE: Kayaku Gakkaishi (1996), 57(4), 160-165
CODEN: KAGAEA; ISSN: 1340-2781
PUBLISHER: Kayaku Gakkai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

L4 ANSWER 301 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The utility of mercury(II) dinitramide, Hg(N3O4)2, in addn. to C:C bonds, mercuration, alkylation, and complexation is reported. E.g., reaction of Hg(N3O4)2 with ethylene in H2O gave 51% O(CH2CH2HgN3O4)2; alkylation of Hg(N3O4)2 with RI (R = Me, Et, Pr, Bu, Me2CH) gave 22-42% yields of mixts. of RN(NO2)2 and RON(O):NNO2.

ACCESSION NUMBER: 1996:554631 CAPLUS
DOCUMENT NUMBER: 125:168227
TITLE: Dinitramide and its salts. Part 9. Mercury(II) dinitramidate, new reagent in the chemistry of organomercury compounds
AUTHOR(S): Luk'yanov, O. A.; Anikin, O. V.; Tartakovskii, V. A.
CORPORATE SOURCE: Institut Organicheskoi Khimii im. N. D. Zelinskogo, Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1996), (2), 451-458
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian
OTHER SOURCE(S): CASREACT 125:168227

L4 ANSWER 302 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The thermal behavior and energetic properties of ammonium dinitramide, ADN, are described. Thermal decompn. reactions and proposed mechanistic decompn. pathways are presented.

ACCESSION NUMBER: 1996:514618 CAPLUS
DOCUMENT NUMBER: 125:172484
TITLE: Thermal behavior of ammonium dinitramide
AUTHOR(S): Loebbecke, S.; Krause, H.; Pfeil, A.
CORPORATE SOURCE: Fraunhofer Inst. Chemische Technologie ICT, Pfinztal, D-76318, Germany
SOURCE: International Annual Conference of ICT (1996), 27th(Energetic Materials), 143.1-143.4
CODEN: IACIEQ
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 303 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review, with 7 refs., of the development and testing of novel energetic compds., for incorporation into formulations for high-performance rocket and gun propellants, high explosives, and pyrotechnics. The research was carried out by SNPE (France). Examples of promising compds. are CL-20, glycidyl azide polymer (with hydroxylated analogs), azide-terminated glycidyl azide polymer, butacene combustion catalyst, ammonium dinitramide, and NTO.

ACCESSION NUMBER: 1996:514509 CAPLUS
DOCUMENT NUMBER: 125:199998
TITLE: New molecules for high energetic materials
AUTHOR(S): Finck, Bernard; Graindorge, Herve
CORPORATE SOURCE: Cent. Rech. Bouchet, SNPE/DFP, Vert le Petit, 91710, Fr.
SOURCE: International Annual Conference of ICT (1996), 27th(Energetic Materials), 23.1-23.13
CODEN: IACIEQ
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

L4 ANSWER 304 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The elec. spark sensitivity test, drop ball test, friction test, and DSC test have been done for energetic materials, including primary and secondary high explosives, and mixts. of fuel and oxidizer. The correlations between the results of these tests were examd., and it was found that there are rough correlations between them for explosive compds.
but not for fuel-oxidizer mixts. It is our conclusion that we should confirm the high sensitivity of a material by conducting all tests.

ACCESSION NUMBER: 1996:508330 CAPLUS
DOCUMENT NUMBER: 125:146431
TITLE: Correlations between screening test results of energetic materials
AUTHOR(S): Hasegawa, Takayuki; Kawashima, Eiichi; Satoh, Kazuya; Yoshida, Tadao
CORPORATE SOURCE: College of Engineering, Hosei University, Koganei, 184, Japan
SOURCE: Proceedings of the International Pyrotechnics Seminar (1996), 22nd, 195-207
CODEN: PPYSD7; ISSN: 0270-1898
PUBLISHER: IIT Research Institute
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 305 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Unavailable

ACCESSION NUMBER: 1996:486443 CAPLUS
DOCUMENT NUMBER: 125:146443
TITLE: The charge density and electrostatic potential of three dinitramide salts (explosives, propellants)
AUTHOR(S): Martin, Anthony
CORPORATE SOURCE: Univ. of Toledo, Toledo, OH, USA
SOURCE: (1996) 176 pp. Avail.: Univ. Microfilms Int., Order No. DA9621853
From: Diss. Abstr. Int., B 1996, 57(3), 1822
DOCUMENT TYPE: Dissertation
LANGUAGE: English

L4 ANSWER 306 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The Department of Defense is currently considering replacing ammonium perchlorate with ammonium dinitramide (ADN). The ADN, a class 1.1 explosive oxidizer, will be used in solid rocket propellant mixts. and explosives. This study was intended to evaluate the potential of ADN to produce alterations in paternal fertility, maternal pregnancy and lactation, and growth and development of offspring. Male and female rats received drinking water treated with 2000, 1000, or 200 mg ADNIL throughout the study. Mating occurred following 14 days of treatment. All dams, one-half the males, and representative pups were maintained for a total of 90 days of treatment. No mortality occurred in parental animals during the study. Treatment of ADN resulted in no adverse effects
on mating as 92-100% of the animals mated. No treatment-related effects were seen in parental animals clin. or histopathol. Adverse treatment-related effects were noted in maternal and paternal fertility indexes, gestational indexes, and live birth indexes in both the high- and
mid-dose groups. Litter sizes in the high- and mid-dose groups were significantly smaller than those of the low-dose and control groups. Mean
pup wts. showed no significant differences between ADN-treated pups and controls. Gross and histopathol. examn. of the animals failed to identify
the cause for the decrease in litter prodn. in the high- and mid-dose dams. This study indicates that ADN is a reproductive toxicant. The no-observable-effect level is 289 mg/kg/day, the median dose of the low-level female rats.

ACCESSION NUMBER: 1996:456353 CAPLUS
DOCUMENT NUMBER: 125:107376
TITLE: Reproductive toxicity screen of ammonium dinitramide administered in the drinking water of Sprague-Dawley rats
AUTHOR(S): Kinkead, E. R.; Wolfe, R. E.; Flemming, C. D.; Leahy, H. F.; Caldwell, D. J.
CORPORATE SOURCE: ManTech Environ. Technol., Inc., Dayton, OH, USA
SOURCE: Report (1995), AL/OET-TR-1994-0162; Order No. AD-A303786, 39 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1996, 96(15), Abstr. No. 15-01,118
DOCUMENT TYPE: Report
LANGUAGE: English

L4 ANSWER 307 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Nitration of nitramide to dinitramide with NO2BF4 (I), NO2SO3F (II), NO2S2O7H, and (NO2)2S2O7 is described. The best yields (up to 100%) were obtained when I and II were used with MeCN as solvent.

ACCESSION NUMBER: 1996:455715 CAPLUS
DOCUMENT NUMBER: 125:264344
TITLE: Dinitramide and its salts. 11. Synthesis of dinitramide by nitration of nitramide with nitryl salts
AUTHOR(S): Luk'yanov, O. A.; Shvedova, S. N.; Shepelev, E. V.; Varfolomeeva, O. N.; Malkina, N. N.; Tartakovskii, V. A.
CORPORATE SOURCE: Zelinskii, N.D., Institut Organicheskoi Khimii, Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1996), (6), 1569-1570
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 308 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The IR and Raman spectra of the NH4+, K+, and Cs+ salts of N(NO2)2- in the solid state and in soln. were measured and are assigned with the help of ab initio calcns. at the HF/6-31G* and MP2/6-31+G* levels of theory. In agreement with the variations obsd. in the crystal structures, the vibrational spectra of N(NO2)2- are strongly influenced by the counterions and the phys. state. Whereas the ab initio calcns. for free N(NO2)2- indicate a min. energy structure of C2 symmetry, Raman polarization measurements on solns. of N(NO2)2- suggest point group C1 (i.e., no symmetry). This is attributed to the small (<3 kcal/mol) N-NO2 rotational barrier in N(NO2)2- which allows for easy deformation.

ACCESSION NUMBER: 1996:449488 CAPLUS
DOCUMENT NUMBER: 125:126293
TITLE: The Dinitramide Anion, N(NO2)2-
AUTHOR(S): Christe, Karl O.; Wilson, William W.; Petrie, Mark A.; Michels, Harvey H.; Bottaro, Jeffrey C.; Gilardi, Richard
CORPORATE SOURCE: Propulsion Directorate, Phillips Laboratory, Edwards Air Force Base, CA, 93524, USA
SOURCE: Inorganic Chemistry (1996), 35(17), 5068-5071
CODEN: INOCAJ; ISSN: 0020-1669
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 309 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Unavailable

ACCESSION NUMBER: 1996:429212 CAPLUS
DOCUMENT NUMBER: 125:90637
TITLE: The role of surface layer processes in solid propellant combustion
AUTHOR(S): Chakravarthy, Satyanarayanan R.
CORPORATE SOURCE: Georgia Institute of Technology, Atlanta, GA, USA
SOURCE: (1995) 248 pp. Avail.: Univ. Microfilms Int., Order No. DA9614089
From: Diss. Abstr. Int., B 1996, 57(1), 480
DOCUMENT TYPE: Dissertation
LANGUAGE: English

L4 ANSWER 310 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Kinetics of K dinitramide decompn. was studied in melts and solns. at 130 - 200.degree.. The reaction rate const. was k = 10[15.1.+-.0.3] exp(39.500.+-.600)/RT c-1. The reaction mechanism was suggested.

ACCESSION NUMBER: 1996:410127 CAPLUS
DOCUMENT NUMBER: 125:178642
TITLE: Thermal decomposition of the potassium salt of dinitramide in the liquid state
AUTHOR(S): Dubovitskii, F. I.; Volkov, G. A.; Grebennikov, V. N.; Manelis, G. B.; Nazin, G. M.
CORPORATE SOURCE: Institut Khimicheskoi Fiziki, Chernogolovka, Russia
SOURCE: Doklady Akademii Nauk (1996), 347(6), 763-765
CODEN: DAKNEQ; ISSN: 0869-5652
PUBLISHER: MAIK Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 311 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The kinetics of thermal decompn. of KN(NO2)2 was studied depending on the humidity of samples (which was varied by recrystn. from different solvents) and temp. Obsd. differences from thermal decompn. the molten salt are discussed.

ACCESSION NUMBER: 1996:396861 CAPLUS
DOCUMENT NUMBER: 125:258075
TITLE: Thermal decomposition of dinitramide potassium salt in the solid state
AUTHOR(S): Dubovitskii, F. I.; Volkov, G. A.; Grebennikov, V. N.; Manelis, G. B.; Nazin, G. M.
CORPORATE SOURCE: Institut Khimicheskoi Fiziki, Chernogolovka, Russia
SOURCE: Doklady Akademii Nauk (1996), 348(2), 205-206
CODEN: DAKNEQ; ISSN: 0869-5652
PUBLISHER: MAIK Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 312 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB N,N-dinitro derivs. of urethanes, benzamide, and p-toluenesulfonamide were synthesized. Their reaction with NH3 afforded ammonium dinitramide in 44-85 % yield.

ACCESSION NUMBER: 1996:396575 CAPLUS
DOCUMENT NUMBER: 125:172552
TITLE: Dinitramide and its salts. Part 10. Preparation of dinitramide salts from organic acid N,N-dinitramides
AUTHOR(S): Luk'yanov, O. A.; Kozlova, I. K.; Shitov, O. P.; Konnova, Yu. V.; Kalinina, I. V.; Tartakovskii, V. A.
CORPORATE SOURCE: Zelinskii, N.D., Institut Organicheskoi Khimii, Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1996), (4), 908-912
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 313 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A 90-day general toxicity/reproductive screen performed on ammonium dinitramide (ADN) at doses of 162, 103, 29, and 0.0 mg ADN/kg/day resulted in a treatment-related adverse effect on litter prodn. Incidences of animals producing litters (1/11, 3/12, 12/12, and 11/12, resp.) and mean nos. of pups per litter (7, 7, 16, and 15, resp.) both were statistically significantly less than controls. In a follow-up study, mated dams treated with ADN at the same doses and exam. at gestation days (GDs) 10 and 20 showed an effect in fetus loss similar to that seen in the reproductive screen. A pre- vs. postimplantation dosing regimen indicated that implantation is vulnerable to ADN effects during the preimplantation period (GDs 1-3). No implantation sites were found in the rats treated with 2000 mg ADN/L drinking water (target dose of 160 mg ADN/kg/day) during GDs 1-3. Nos. of implantation sites found in the rats treated during GDs 4-8 were similar to those found in the control group. The pituitary was not identified specifically in this study as the site of primary action, but serum progesterone was reduced by 27%, which may have resulted in reduced fertility.

ACCESSION NUMBER: 1996:374781 CAPLUS
DOCUMENT NUMBER: 125:51075
TITLE: Dose- (and time-) dependent blockade of pregnancy in Sprague-Dawley rats administered ammonium dinitramide in drinking water
AUTHOR(S): Kinkead, Edwin R.; Wolfe, Robin E.; Feldmann, Marcia L.
CORPORATE SOURCE: ManTech Environmental Technology, Inc., Dayton, OH, 45437-0009, USA
SOURCE: Toxicology and Industrial Health (1996), 12(1), 59-67
CODEN: TIHEEC; ISSN: 0748-2337
PUBLISHER: Princeton Scientific
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 314 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Mercury(II) dinitramidate, Hg(N3O4)2, (I) was prepd. Its electronic and vibrational spectra show that I in a cryst. phase and in solns. in nonpolar solvents is a covalent compd., mercury atom being bond with oxygen atom. In polar solvents I dissocd. to form mercury(II) cation and dinitramide anion N3O4-.

ACCESSION NUMBER: 1996:369314 CAPLUS
DOCUMENT NUMBER: 125:103355
TITLE: Dinitramide and its salts. Part 8. Synthesis, spectra, and the structure of mercury(II) dinitramidate
AUTHOR(S): Shlyapochnikov, V. A.; Cherskaya, N. O.; Luk'yanov, O. A.; Anikin, O. V.; Tartakovskii, V. A.
CORPORATE SOURCE: Zelinskogo, N. D., Institut Organicheskoi Khimii, Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1996), (2), 447-450
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 315 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The novel synthesis of nitramines and nitramides by nitrolysis of the corresponding N-(trialkylsilyl) compds. using dinitrogen pentoxide (N2O5) is described. In 17 examples the yields were generally in the range 70 to over 90%, falling below the lower figure only if alkylsilyl groups with chain lengths >2 were employed. The reactions were characterized by their cleanliness, and the co-products, trialkylsilyl nitrates, were relatively stable and volatile, facilitating isolation of the nitrated products. Furthermore, these trialkylsilyl nitrates, unlike the acyl nitrates produced in conventional nitrolyses, were isolable and could be used to nitrate further substrates, thus eliminating problems of disposal of spent liquors from conventional reactions. The process was both mild and versatile, enabling nitramine functions to be introduced into a variety of mol. environments, and two notable cases were exemplified, namely, N-nitroaziridines and N,N'-dinitroaminals.

ACCESSION NUMBER: 1996:288532 CAPLUS
DOCUMENT NUMBER: 125:57513
TITLE: A new route to nitramines in nonacidic media
AUTHOR(S): Millar, R. W.
CORPORATE SOURCE: Defence Res. Agency, Kent, TN14 7BP, UK
SOURCE: ACS Symposium Series (1996), 623(Nitration), 122-133
CODEN: ACSMC8; ISSN: 0097-6156
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 125:57513

L4 ANSWER 316 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Neat samples of energetic materials and propellant formulations were examd. by near-IR Fourier-transform Raman spectroscopy at 100-3000 cm-1 spectral range (Raman shift). An intense peak in the spectrum of HMX was obsd. at a Raman shift of .apprx.150 cm-1, with an intensity close to that of the ring-stretching features of HMX at 800-1000 cm-1. The technique has application in anal. and characterization of propellant formulations, esp. for potential forensic applications.

ACCESSION NUMBER: 1996:285145 CAPLUS
DOCUMENT NUMBER: 124:320903
TITLE: Fourier transform Raman spectroscopy of some energetic materials and propellant formulations
AUTHOR(S): Fell, N. F.; Widder, J. M.; Medlin, S. V.; Pesce-Rodriguez, R. A.; McNesby, K. L.
CORPORATE SOURCE: U.S. Army Research Laboratory, AMSRL-WT-PC, Aberdeen Proving Ground, MD, 21005, USA
SOURCE: Proceedings of the Beijing International Symposium on Pyrotechnics and Explosives, 3rd, Beijing, Nov. 6-9, 1995 (1995), 124-134. Editor(s): Yuxiang, Ou. China Ordnance Society: Beijing, Peop. Rep. China.
CODEN: 62RIAT
DOCUMENT TYPE: Conference
LANGUAGE: English

L4 ANSWER 317 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review, with 9 refs., of advances in development of explosives and solid propellants since the end of the Cold War, focusing on the development of new energetic compds. and oxidizers [esp. TNAZ (1,3,3-trinitroazetidine), HNIW (hexanitrohexaazaisowurtzitane), and ADN (ammonium dinitramide), and boron-contg. propellants]. Factors driving the research included higher power (specific impulse), safer and more economical manufg. methods, cheaper prodn. costs, and environmental aspects (e.g., replacements for NH4ClO4 oxidizer in rocket propulsion).

ACCESSION NUMBER: 1996:215910 CAPLUS
DOCUMENT NUMBER: 124:264988
TITLE: Recent advances in explosives and solid propellants
AUTHOR(S): Bottaro, Jeffrey C.
CORPORATE SOURCE: Organic, Processing, Environmental Chemistry Dep., SRI International, Menlo Park, CA, 94025, USA
SOURCE: Chemistry & Industry (London) (1996), (7), 249-52
CODEN: CHINAG; ISSN: 0009-3068
PUBLISHER: Society of Chemical Industry
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

L4 ANSWER 318 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The methods of probing mass spectrometry (PMS) for obtaining flame diagnostics and for the study of kinetics and mechanism of the thermal decompn. products of energetic materials were described. Several types of instruments based on microprobe and mol. beam mass spectrometric sampling were developed. Time-of-flight mass spectrometry was also used. App. for high (10 atm.) and low (<1 atm) pressure were developed for the study of "in-situ" combustion and decompn. of energetic materials. Several examples were presented to demonstrate application of the PMS method for flame structure studies, thermal decompn., and dynamics of ignition. Exptl. data on decompn. of double-base propellants, ammonium dinitramide, and ammonium perchlorate were presented.

ACCESSION NUMBER: 1996:176836 CAPLUS
DOCUMENT NUMBER: 124:206473
TITLE: Combustion chemistry of energetic materials studied by probing mass spectrometry
AUTHOR(S): Korobeinichev, O. P.; Kuibida, L. V.; Paletsky, A. A.; Shmakov, A. G.
CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion, Siberian Branch Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: Materials Research Society Symposium Proceedings (1996), 418(Decomposition, Combustion, and Detonation Chemistry of Energetic Materials), 245-55
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 319 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB High-resoln. (sin.theta./.lambda. < 1.34 .ANG.-1), low-temp. (85 K) x-ray diffraction data were used to map the deformation d. and the derived electrostatic potential for three dinitramide salts. The traditional presentation of contour maps was replaced with 3-dimensional views of the mol. A comparison of the dinitramide ions from each salt was presented.

ACCESSION NUMBER: 1996:176810 CAPLUS
DOCUMENT NUMBER: 124:236464
TITLE: Charge densities and electrostatic potentials for energetic materials
AUTHOR(S): Pinkerton, A. A.; Martin, A.
CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo, OH, 43606, USA
SOURCE: Materials Research Society Symposium Proceedings (1996), 418(Decomposition, Combustion, and Detonation Chemistry of Energetic Materials), 49-54
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 320 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ab initio geometries and vibrational spectra were calcd. for the amine structures of dinitramine HN(NO2)2 and methyldinitramine CH3N(NO2)2 at the RHF and MP2 levels using the std. 6-31G* and 6-31G** basis sets. The mols. have different symmetries in their equil. states, the Cs and C1 resp. By scaling the ab initio RHF/6-31G* force fields with the previously obtained set of transferable factors, the available exptl. vibrational bands were assigned to the fundamental modes and frequencies were predicted for the normal vibrations of the unmeasured spectral regions. Some common patterns of the geometrical parameters, vibrational spectra, and force fields of the simplest nitramines are discussed.

ACCESSION NUMBER: 1996:164983 CAPLUS
DOCUMENT NUMBER: 124:245230
TITLE: Ab initio calculations of the structures and the harmonic force fields of the amine forms of dinitramine and methyldinitramine. Vibrational spectra and their interpretation using a scaling procedure
AUTHOR(S): Khaikin, L. S.; Grikina, O. E.; Shlyapochnikov, V. A.; Bock, Ch. W.
CORPORATE SOURCE: Dep. Chem., M. V. Lomonosov Moscow State Univ., Moscow, 119899, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1995), (11), 2135-47
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 321 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Fourier transform Raman spectroscopy employing near-IR laser radiation at a wavelength of 1.064 .mu.m (9394.5 cm-1) as the scattering source was used to characterize neat energetic materials and several propellant formulations. Raman spectra are reported over the region from 75 to 3000 cm-1, relative to the laser line. The technique was extended to the study of cryst. components of propellant formulations during heating. The utility of the technique in detg. the principal cryst. ingredient in a propellant formulation is demonstrated.

ACCESSION NUMBER: 1996:134014 CAPLUS
DOCUMENT NUMBER: 124:188250
TITLE: Fourier transform Raman spectroscopy of some energetic materials and propellant formulations. II
AUTHOR(S): Fell, N. F.; Widder, J. M.; Medlin, S. V.; Morris, J. B.; Pesce-Rodriguez, R. A.; McNesby, K. L.
CORPORATE SOURCE: US Army Res. Lab., Aberdeen Proving Ground, Aberdeen, MD, 21005-5066, USA
SOURCE: Journal of Raman Spectroscopy (1996), 27(2), 97-104
CODEN: JRSPAF; ISSN: 0377-0486
PUBLISHER: Wiley
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 322 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The Department of Defense is currently considering replacing ammonium perchlorate with ammonium dinitramide (ADN), a class 1.1 explosive oxidizer, to be used in solid rocket propellant mixts. and explosives. This study was intended to evaluate the potential of ADN to produce alterations in paternal fertility, maternal pregnancy and lactation, and growth and development of offspring. Male and female rats received drinking water contg. 0.0, 0.2, 1.0, or 2.0 g ADN/L throughout the study. Mating occurred following 14 days of treatment. All dams, one-half the males, and representative pups were maintained for 90 days of treatment. No mortality occurred in parental animals during the study. Treatment with ADN resulted in no adverse effects on mating; 92-100% of the animals mated. No treatment-related effects were seen in parental animals clin. or histopathol. Adverse treatment-related effects were noted in maternal and paternal fertility indexes, gestational indexes, and live birth indexes in both the mid- and high-dose groups. Litter sizes in the mid- and high-dose groups were significantly smaller than those of the low-dose and control groups. Mean pup wts. showed no significant differences between ADN-treated pups and controls. Gross and histopathol. examn. of the animals failed to identify the cause for ther decrease in litter prodn. in the mid- and high-dose dams. This study indicates that ADN is a reproductive toxicant. The no-observable-effect level (NOEL) is 29 mg/kg/day, the median dose of the low-level female rats.

ACCESSION NUMBER: 1996:125343 CAPLUS
DOCUMENT NUMBER: 124:167864
TITLE: Reproductive toxicity screen of ammonium dinitramide administered in the drinking water of Sprague-Dawley rats
AUTHOR(S): Kinkead, Edwin R.; Wolfe, Robin E.; Flemming, Carlyle D.; Leahy, Harold F.; Caldwell, Daniel J.; Miller, Clay R.; Marit, Gary B.
CORPORATE SOURCE: ManTech Environmental Technology, Inc., Dayton, OH, 45437-0009, USA
SOURCE: Toxicology and Industrial Health (1995), 11(4), 437-48
CODEN: TIHEEC; ISSN: 0748-2337
PUBLISHER: Princeton Scientific
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 323 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The dinitramide ion (N3O4-) is a relatively new simple N oxide species with previously unknown coordination chem. Here the authors report the 1st metal complex of N3O4-, fac-Re(bpy)(CO)3N3O4. The x-ray crystal structure of fac-Re(bpy)(CO)3N3O4 clearly shows that coordination occurs at the central N of the dinitramide skeleton with the rest of the complex possessing the typical facial geometry exhibited by Re(bpy)(CO)3X complexes. The Re-N3O4 bond length is 2.223(10) .ANG.. Fac-Re(bpy)(CO)3N3O4 is extremely photosensitive in soln. and photodecomposes to fac-Re(bpy)(CO)3NO3 and N2O with a quantum yield (.phi.436) of 0.67 .+-. 0.05.

ACCESSION NUMBER: 1996:121465 CAPLUS
DOCUMENT NUMBER: 124:192393
TITLE: Coordination Chemistry and Photoreactivity of the Dinitramide Ion
AUTHOR(S): Trammell, Scott; Goodson, Patricia A.; Sullivan, B. Patrick
CORPORATE SOURCE: Department of Chemistry, University of Wyoming, Laramie, WY, 82071-3838, USA
SOURCE: Inorganic Chemistry (1996), 35(6), 1421-2
CODEN: INOCAJ; ISSN: 0020-1669
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 324 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The pressure- and temp.-reaction phase diagram for ammonium dinitramide (ADN) was detd. using a high-temp.-high-pressure diamond anvil cell with optical polarizing light microscopy, Fourier-transform IR spectroscopy, laser-Raman spectroscopy, and energy dispersive x-ray diffraction. The phase diagram was detd. at between ambient pressure and 10.0 GPa and from from ~75.degree. to the decompn. temp., or 120.degree.. The diagram delineates the melting curve for .alpha.-ADN, a reversible phase transition in .alpha.-ADN, forming a new high-pressure monoclinic polymorph, .beta.-ADN, and also identifies the pressure and temp. conditions at which a solid phase rearrangement occurs to form ammonium nitrate (AN) and N2O. Energy-dispersive x-ray diffraction and Raman spectra were obtained for both .alpha.- and .beta.-ADN as a function of pressure at room temp.
ACCESSION NUMBER: 1996:81527 CAPLUS
DOCUMENT NUMBER: 124:121368
TITLE: Pressure, Temperature Reaction Phase Diagram for Ammonium Dinitramide
AUTHOR(S): Russell, T. P.; Piermarini, G. J.; Block, S.; Miller, P. J.
CORPORATE SOURCE: Chemistry Division, Naval Research Laboratory, Washington, DC, 20375-5320, USA
SOURCE: Journal of Physical Chemistry (1996), 100(8), 3248-51
CODEN: JPCHAX; ISSN: 0022-3654
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 325 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A method was developed to analyze ammonium dinitramide (ADN), a new energetic material, as well as anionic impurities, by capillary ion electrophoresis with UV detection. Anal. of ADN samples could be done in under 5.5 min employing this method. Anal. of pure samples as well as aged samples was accomplished.
ACCESSION NUMBER: 1996:75433 CAPLUS
DOCUMENT NUMBER: 124:121366
TITLE: Analysis of anionic impurities in ammonium dinitramide
(ADN). Part II. Capillary ion electrophoresis
AUTHOR(S): Oehrle, Stuart A.
CORPORATE SOURCE: Waters Corporation, Milford, MA, 01757, USA
SOURCE: Journal of Energetic Materials (1996), 14(1), 37-45
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 326 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A method was developed to analyze ammonium dinitramide (ADN), a new energetic materials, as well as anionic impurities, using ion chromatog. with UV detection. Anal. of ADN samples could be carried out in <20 min. Anal. of pure samples as well as aged samples was accomplished.
ACCESSION NUMBER: 1996:75432 CAPLUS
DOCUMENT NUMBER: 124:121365
TITLE: Analysis of anionic impurities in ammonium dinitramide
(ADN). Part I. Ion chromatographic analysis
AUTHOR(S): Oehrle, Stuart A.
CORPORATE SOURCE: Waters Corporation, Milford, MA, 01757, USA
SOURCE: Journal of Energetic Materials (1996), 14(1), 27-36
CODEN: JOEMDK; ISSN: 0737-0652
PUBLISHER: Dowden, Brodman & Devine, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 327 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The mixts. that consist of aq. soln. of ammonium nitrate and ammonium dinitramide with hollow glass microspheres and propellant additives are studied. The dependence of parameters of detonation on the amt. of additives in the mixt. and diagrams of pressure vs. particles velocity are detd. on the basis of the thermodn. calcn. of ideal detonation and assocd. processes (shock wave and rarefication wave). The characteristics of high explosive action is calcd. as the percentage ratio of pressure of the shock wave formed in the surrounding medium with similar conditions during action of detonation products explosive being investigated and std. explosive. The brisance of new emulsion explosives is comparable with or higher than that of the max. d. trotyl. The brisance of com. emulsion explosives is increased by 60% during replacement of ammonium nitrate by ammonium dinitramide and hollow glass microspheres by propellant.
ACCESSION NUMBER: 1996:26761 CAPLUS
DOCUMENT NUMBER: 124:91826
TITLE: Comparative characteristics of some classes of commercial emulsion explosives. I. High explosive action
AUTHOR(S): Odintsov, V. V.; Pepekin, V. I.
CORPORATE SOURCE: Inst. Khim. Fiz. im. Semenova, Moscow, Russia
SOURCE: Khimicheskaya Fizika (1995), 14(7), 132-44
CODEN: KHFID9; ISSN: 0207-401X
PUBLISHER: Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 328 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Castable high explosive compns. comprise a binder system contg. plastisol grade nitrocellulose (PNC) and an energetic plasticizer. The explosive compn. also includes a solid high explosive ingredient such as an explosive nitramine. Reactive metals such as Al, Mg, or Ti, and oxidizers such as ammonium perchlorate, ammonium nitrate, or ammonium dinitramide, are optionally included in the explosive compns. of the present invention. The disclosed explosive compns. have a typical detonation velocities >8000 m/s.

ACCESSION NUMBER: 1995:1002983 CAPLUS
DOCUMENT NUMBER: 124:91931
TITLE: Castable explosive composition having nitrocellulose binder
INVENTOR(S): Wallace, Ii Ingvar A.; Braithwaite, Paul C.; Neidert, Jamie B.
PATENT ASSIGNEE(S): Thiokol Corporation, USA
SOURCE: U.S., 6 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5468313	A	19951121	US 1994-346587	19941129

PRIORITY APPLN. INFO.: US 1994-346587 19941129

L4 ANSWER 329 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The explosive compns. include a sep. acceptor phase and a sep. explosive phase, and the acceptor phase contains a halogenated polymer and a reactive metal which are capable of reacting at high temp. and pressure while the explosive phase includes a non-metalized explosive. A portion of the explosive phase surrounds the acceptor phase, and detonation of the explosive phase exposes the acceptor phase to high temps. and pressures which permit the metal and halogenated polymer to efficiently react and produce even greater temps. and pressures. The explosives produce a detonation pressure in >200 kilobars at the Chapman-Jouget (C-J) condition.

ACCESSION NUMBER: 1995:1002965 CAPLUS
DOCUMENT NUMBER: 124:60767
TITLE: Explosives having enhanced air blast and extended reaction times
INVENTOR(S): Lund, Gary K.; Braithwaite, Paul C.
PATENT ASSIGNEE(S): Thiokol Corporation, USA
SOURCE: U.S., 8 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5467714	A	19951121	US 1993-168714	19931216

PRIORITY APPLN. INFO.: US 1993-168714 19931216

L4 ANSWER 330 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Crystallog. data, at. coordinates and mol. structures were detd. of the potassium, ammonium and hydrazine salts of dinitramide [M+N(NO2)2-, where M = K, NH4, N2H5] by x-ray diffraction anal. The anion charge of the onion salts is delocalized over the two nitro-groups but in the K-salts it is localized on one of these. The pKa of dinitramide was detd. to be -5.62 in HCl by spectrophotometric method. The dinitramide is one of the strongest mineral acids.

ACCESSION NUMBER: 1995:953935 CAPLUS
DOCUMENT NUMBER: 124:102383
TITLE: Crystal and molecular structure and acid-base properties of dinitramide salts
AUTHOR(S): Gidaspov, B. V.; Tselinskii, I. V.; Mel'nikov, V. V.; Margolis, N. V.; Grigor'eva, N. V.
CORPORATE SOURCE: St. Peterburg. Gos. Tekhnol. Inst., Russia
SOURCE: Zhurnal Obshchei Khimii (1995), 65(6), 995-1002
CODEN: ZOKHA4; ISSN: 0044-460X
PUBLISHER: Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 331 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The vibrational and electronic spectra of dinitramide salts MN(NO2)2 (M = K, Na, Li, NH4, Fe, Ag, Mn, Mg, Rb, C(NH2)3) were studied. The exptl. data on IR and Raman spectra of solns. and melts of the salts were satisfactorily interpreted from the anion model with the C2v symmetry. The complication of the spectra in the cryst. phase was explained by restructuring of the anion, which reduces its symmetry and makes the nitro groups nonequiv.

ACCESSION NUMBER: 1995:908284 CAPLUS
DOCUMENT NUMBER: 123:324729
TITLE: Dinitramide and its salts. 7. Spectra and structure of dinitramide salts
AUTHOR(S): Shlyapochnikov, V. A.; Oleneva, G. I.; Cherskaya, N. O.; Luk'yanov, O. A.; Gorelik, V. P.; Anikin, O. V.; Tartakovsky, V. A.
CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Russian Acad. Sci., Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1995), (8), 1508-12
CODEN: IASKEA
PUBLISHER: Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 332 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The IR and Raman spectra of N,N-dinitromethylamine were studied and the normal coordinate anal. were performed. The frequency assignments were done. The methyldinitramine mol. is assumed to belong to Cs symmetry group.

ACCESSION NUMBER: 1995:908283 CAPLUS
DOCUMENT NUMBER: 124:70057
TITLE: Vibrational spectra and structure of N,N-dinitromethylamine
AUTHOR(S): Avakyan, V. G.; Shlyapochnikov, V. A.; Federov, B. S.; Margolin, L. N.; Volkova, V. V.
CORPORATE SOURCE: A. V. Topchiev Inst. Petrochem. Synthesis, Russian Acad. Sci., Moscow, 117912, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1995), (8), 1503-7
CODEN: IASKEA
PUBLISHER: Nauka
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 333 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The development of chlorine- and fluorine-free solid propellants and the new type of oxidizers with superior properties were discussed with respect to air pollutant emissions known to form from combustion of ammonium perchlorate- and HMX-contg. solid propellants. Ammonium nitrate, hydrazine mononitrate, ammonium dinitramide, and hydrazine nitroform were proposed as suitable oxidizers to substitute for ammonium perchlorate and HMX. The thermodn. calcn. for some model formulations were made and compared with those of conventional propellants.

ACCESSION NUMBER: 1995:907352 CAPLUS
DOCUMENT NUMBER: 124:33076
TITLE: Possible ways to develop solid propellants for ecological safety
AUTHOR(S): Manelis, G. B.
CORPORATE SOURCE: Inst. Chem. Phys. Chernogolovka, Russia
SOURCE: Hanneng Cailiao (1995), 3(2), 9-19
CODEN: HACAFQ; ISSN: 1006-9941
PUBLISHER: Hanneng Cailiao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 334 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Secondary arom. nitramines absorb in IR at 1517-1536, 1285-1299 and 755-759 cm-1 irresp. of the nature of an arom. ring. Comparison of the 1H and 13C NMR spectra of ring substituted N-methyl-N-phenylnitramines indicate that interaction between the substituents is poorly transmitted across the ring. .alpha.-Cleavage obsd. in the mass spectra of nitramines shows that the Ar-N bond is abnormally weak. Dipole moments of N-methyl-N-phenylnitramines find a simple explanation assuming that the unshared electron pair is shifted towards the arom. ring only in the presence of electron demanding substituents in conjugated position. The results are incompatible with the solvent-caged-pair theory of the nitramine rearrangement.

ACCESSION NUMBER: 1995:903903 CAPLUS
DOCUMENT NUMBER: 124:158990
TITLE: Spectral and electrooptical properties of ring substituted N-methyl-N-phenylnitramines
AUTHOR(S): Daszkiewicz, Z.; Nowakowska, E.; Prezdo, W. W.; Kyziol, J. B.
CORPORATE SOURCE: Inst. Chem., Univ. Opole, Oleska, 45-052, Pol.
SOURCE: Polish Journal of Chemistry (1995), 69(10), 1437-46
CODEN: PJCHDQ; ISSN: 0137-5083
PUBLISHER: Polish Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 335 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The kinetics of thermal decompn. of ammonium dinitramide, NH4N(NO2)2 (I), was studied manometrically, adjusted by spectrophotometric anal. of the N3O4-. The initial decompn. of I proceeds via monomol. cleavage of the N-N bond in the anion; in the melt, the salt dissocs. to NH4+, in which acids play a definite part. The stability of I in the molten state is not high; it is possible to handle I under isothermal conditions at up to 100.degree. for 1 h. The solid-state stability of I is high enough to conduct technol. processes at 60-70.degree.; long-term storage is possible at 20-25.degree.. Dried samples of I with water content <0.2% showed abnormal (i.e., non-Arrhenius) decompn. kinetics. At 60.degree., the solid-phase decompn. proceeds faster than in the melt at 100.degree.. To avoid non-Arrhenius decompn., it is necessary to control the moisture content of I.

ACCESSION NUMBER: 1995:866192 CAPLUS
DOCUMENT NUMBER: 123:261203
TITLE: Thermal decomposition of dinitramide ammonium salt
AUTHOR(S): Manelis, G. B.
CORPORATE SOURCE: Institute Chemical Physics RAS, Chernogolovka, Russia
SOURCE: International Annual Conference of ICT (1995), 26th(Pyrotechnics), 15/1-15/17
CODEN: IACIEQ
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 336 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The characteristics of new formulations of composite and low-signature propellants were discussed with respect to reduced sensitivity, in order to meet official French suggestions (Instruction No. 2060 DGA IPE). Butacene, a prepolymer with grafted combustion catalyst species, reduces the sensitivity and reactivity of high-burning rate composite propellants when submitted to thermal hazards (or threats) without any loss of energetic performance in the operational temp. range. For min.-smoke propellants, the use of energetic binders places limitations on both the amt. of explosive fillers (nitramine) and the sensitivity of the energetic plasticizers to avoid the bore effect (with delayed shock-to-detonation transition phenomena) and losses in performance may have to be allowed. Other results obtained on extruded double-base propellants (SD 1175 and SD 1178) and gas-generator propellants showed that it may be possible to design a motor that meets all the MIL-STD 2105 IM requirements. Some progress can be expected to be made in the near future using new energetic mols. [e.g., hexanitrohexaazaisowurtzitane (CL-20)], polyazidoglycidyl ethers, and hydrazinium nitroformate (mainly in min. smoke propellant) to produce both high-performance and high-insensitivity levels.

ACCESSION NUMBER: 1995:830800 CAPLUS
DOCUMENT NUMBER: 123:291161
TITLE: Energetic insensitive propellants for solid and ducted rockets
AUTHOR(S): Doriath, Gerard
CORPORATE SOURCE: SNPE, CRB, Vert-le-Petit, 91710, Fr.
SOURCE: Journal of Propulsion and Power (1995), 11(4), 870-82
CODEN: JPPOEL; ISSN: 0748-4658
PUBLISHER: American Institute of Aeronautics and Astronautics
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 337 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB To investigate the extent to which individual bond angles around a tetrahedrally bonded carbon atom deviate from the regular tetrahedral angle of 109.47.degree., and the sum of the six angles from the max. value of 656.83.degree., we have used results derived from neutron diffraction studies on mols. contg. the X-CH2-Y grouping, and corresponding results for CH3-X, X-CH2-Y and H-CXYZ structures calcd. using ab initio MO methods. In both sets of data the individual values vary between 105.degree. and 117.degree.. Yet, provided there is no steric constraint such as the bonding of the carbon in a four- or three-membered ring, the summation of the angles is less than the max. by only a few tenths of a degree. An inherent tendency for the summation to attain this max. value is further substantiated by the data for CCC and COC rings. Even though the CCC and CCO ring angles are about 60.degree., compensatory increases in the remaining five angles are sufficiently large to reduce the deficit in the summation to approx. 14.degree.. The distortion of the tetrahedra is discussed in terms of the interplay between bond angle relationships and the bond lengths. In the CH3-X structures in which C-X is a trigonal axis of symmetry, the tetrahedra are elongated along this axis. In other CH3-X structures, where two of the hydrogen atoms, Hb and Hc, are located sym. about the plane contg. C, X, and the other hydrogen atom, Ha, the tetrahedra are also elongated but tilted a little toward, or away from, the Hb-Hc side of the HaHbHc triangle at the base of the tetrahedron.

ACCESSION NUMBER: 1995:815061 CAPLUS
DOCUMENT NUMBER: 124:29045
TITLE: Bond angles around tetrahedrally bonded carbon, and distortion of the tetrahedron in CH3-X structures
AUTHOR(S): George, Philip; Glusker, Jenny P.; Bock, Charles W.
CORPORATE SOURCE: The Institute for Cancer Research, The Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA, 19111, USA
SOURCE: THEOCHEM (1995), 338, 155-73
CODEN: THEODJ; ISSN: 0166-1280
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 338 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The optimized geometry of 1, C2H5-O-C(double bonds oxygen)N(NO2)2, a precursor to ammonium dinitramide, has been computed at the ab initio HF/6-31G* level. We find no structural evidence that 1 exists in the ionic form, C2H5-O-C(triple bonds)O + N(NO2)2(-). The reaction of 1 with NH3 passes through a transition state that is consistent with a concerted substitution (Ingold mechanism) in which N(NO2)2(-) is the leaving group.

ACCESSION NUMBER: 1995:811228 CAPLUS
DOCUMENT NUMBER: 124:29007
TITLE: Computational analysis of some aspects of a synthetic route to ammonium dinitramide
AUTHOR(S): Brinck, T.; Politzer, P.
CORPORATE SOURCE: Dep. Chem., New Orleans Univ., LA, USA
SOURCE: Report (1993), Order No. AD-A274648, 6 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1994, 94(9), Abstr. No. 424,879
DOCUMENT TYPE: Report
LANGUAGE: English

L4 ANSWER 339 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB BMP2/6-3 1 G* geometry optimizations combined with non-local d. functional energy calcns. were used to det. the structure of dinitraminic acid, HN(NO2)2, and the energetics of several processes that may be involved in its decompn. These include bond cleavage and also fragmentation induced by protonation.

ACCESSION NUMBER: 1995:808696 CAPLUS
DOCUMENT NUMBER: 123:266584
TITLE: Computational study of the structure of dinitraminic acid, HN(NO2)2, and the energetics of some possible decomposition steps
AUTHOR(S): Politzer, P.; Seminario, J. M.
CORPORATE SOURCE: Dept. of Chemistry, New Orleans Univ., LA, CA, USA
SOURCE: Report (1993), Rept. No. TR-68; Order No. AD-A274 545, 11 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1994, 94(8), Abstr. No. 421,633
DOCUMENT TYPE: Report
LANGUAGE: English

L4 ANSWER 340 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The synthesis and properties of dinitramide ($N_3O_4^-$) salts with NH_3, hydrazine, hydroxylamine, formamidine, their alkylated and aminated derivs., etc. are described.

ACCESSION NUMBER: 1995:657358 CAPLUS
DOCUMENT NUMBER: 123:101310
TITLE: Dinitramide and its salts. 6. Dinitramide salts with substituted ammonium bases
AUTHOR(S): Luk'yanov, O. A.; Agevnin, A. R.; Leichenko, A. A.; Seregina, N. M.; Tartakovsky, V. A.
CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1995), (1), 113-17
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 341 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A dinitramide salt or acid useful as a stable oxidizer for solid fuel rocket propellant or explosive formulations is prepd. by reacting an N-(alkoxycarbonyl)-N-nitroamide reactant with a nitronium-contg. compd. and treating the reaction mixt. with a base to form the product. The N-(alkoxycarbonyl)-N-nitroamide may be formed by first mixing the corresponding alkylcarbamate with an anhydride of one or more C1-20 org. acids, then adding nitric acid to the reaction mixt.

ACCESSION NUMBER: 1995:621846 CAPLUS
DOCUMENT NUMBER: 123:36626
TITLE: Process for forming dinitramide salt or acid for rocket propellants
INVENTOR(S): Schmitt, Robert J.; Bottaro, Jeffrey C.; Penwell, Paul E.; Bomberger, David C.
PATENT ASSIGNEE(S): SRI International, USA
SOURCE: U.S., 10 pp. Cont.-in-part of U.S. Ser. No. 827, 247, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5415852	A	19950516	US 1992-968928	19921030
WO 9316002	A1	19930819	WO 1993-US752	19930127
W: CA, JP, KR				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 624148	A1	19941117	EP 1993-904688	19930127
EP 624148	B1	19960424		
R: DE, FR, GB, IT, NL, SE				
JP 07503449	T2	19950413	JP 1993-513559	19930127

PRIORITY APPLN. INFO.: US 1992-827247 19920129
US 1992-968928 19921030
WO 1993-US752 19930127

L4 ANSWER 342 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The compd., 3,3-dinitroazetidine, is manufd. by reacting a mixt. of 1-tertiary-butyl-3,3-dinitroazetidine and benzyl chloroformate to form 1-(benzyloxycarbonyl)-3,3-dinitroazetidine (I), reacting I and trifluoromethanesulfonic acid to form 3,3-dinitroazetidinium trifluoromethanesulfonate (II), and neutralizing II with a base. Salts of the 3,3-dinitroazetidine and prepn. of such salts are also disclosed.

ACCESSION NUMBER: 1995:559898 CAPLUS
DOCUMENT NUMBER: 122:294780
TITLE: Synthesis of 3,3-dinitroazetidine for explosives
INVENTOR(S): Hiskey, Michael A.
PATENT ASSIGNEE(S): United States Dept. of Energy, USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5395945	A	19950307	US 1993-37873	19930329
US 37873	A0	19951015		

PRIORITY APPLN. INFO.: US 1993-37873 19930329

L4 ANSWER 343 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The vibrational and electronic spectra of dinitramide and its salts $M^+N(NO_2)_2$, (M = K, Na, Li, NH_4, Hg, Fe, etc.), were studied under different conditions (aggregate states, solvents, and temp.). The spectra were interpreted from exptl. and calcd. data using the normal coordinate anal. Conclusions about the structure of the HN_3O_4 mol. and its ion are made.

ACCESSION NUMBER: 1995:555030 CAPLUS
DOCUMENT NUMBER: 122:325197
TITLE: Molecular absorption spectra of dinitramide and its salts
AUTHOR(S): Shlyapochnikov, V. A.; Oleneva, G. I.; Cherskaya, N. O.; Luk'yanov, O. A.; Gorelik, V. P.; Anikin, O. V.; Tartakovsky, V. A.
CORPORATE SOURCE: Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, 117913 GSP, Leninsky 47, Moscow, Russia
SOURCE: Journal of Molecular Structure (1995), 348, 103-6
CODEN: JMOSB4; ISSN: 0022-2860
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 344 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The strategy of org. synthesis were developed for a new class of inorg. compds., i.e. dinitramide and its metal, NH4+ and substituted NH4+ salts. Its basic concepts were tested in model reactions of .beta.-substituted derivs. of N-alkyl-N-nitrotoluenesulfonamides with bases and were confirmed by the decyanoethylation reaction of N,N-dinitro-.beta.-aminopropionitrile taken as an example.

ACCESSION NUMBER: 1995:542480 CAPLUS
DOCUMENT NUMBER: 123:186721
TITLE: Dinitramide and its salts. 1. Synthesis of dinitramide salts by decyanoethylation reaction of N,N-dinitro-.beta.-aminopropionitrile
AUTHOR(S): Luk'yanov, O. A.; Gorelik, V. P.; Tartakovsky, V. A.
CORPORATE SOURCE: N. D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (1), 94-7
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 345 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The structures, energetics, and decompn. mechanisms of gaseous ammonium nitrite (NH4NO2) and ammonium dinitramide [ADN, NH4N(NO2)2] have been studied theor. by different ab initio MO approaches. In the gas phase, both species have the structures of mol. complexes, [NH3].cntdot.[HX]. The ionic geometries, [NH4+][X-], are not local min. on the potential energy surface and would not be stable after vaporization. For NH4NO2, [NH3].cntdot.[trans-HONO] is the most stable isomer, and [NH3].cntdot.[cis-HONO] and [NH3].cntdot.[HNO2] structures lie higher by 1.4 and 8.4 kcal/mol at the G1 level of theory. For the gaseous ADN, [NH3].cntdot.[HN(NO2)2] is the most stable structure, while the [NH3].cntdot.[HON(O)NNO2] isomer is 2.3 kcal/mol less favorable. The calcd. dissocn. energies of the [NH3].cntdot.[HX] complex to NH3 and HX are 8-9 and 12-14 kcal/mol for NH4NO2 and ADN, resp. The energies for elimination of the NO2 group from HN(NO2)2 and HON(O)NNO2 are found to be 38-40 kcal/mol, while the barrier for HON(O)NNO2 dissocn. is about 42 kcal/mol. We predict the following values of the heats of formation, .DELTA.Hf.degree.(0), in the gas phase: -35.5 kcal/mol for [NH3].cntdot.[trans-HONO] and 3.2 kcal/mol for [NH3].cntdot.[HN(NO2)2]. A realistic mechanism for the decompn. of ADN, which is fully consistent with the products measured by Brill et al. (ref. 3), has been proposed on the basis of these ab initio MO results.

ACCESSION NUMBER: 1995:520831 CAPLUS
DOCUMENT NUMBER: 122:248852
TITLE: Theoretical Study of the Gas-Phase Structure, Thermochemistry, and Decomposition Mechanisms of NH4NO2 and NH4N(NO2)2
AUTHOR(S): Mebel, A. M.; Lin, M. C.; Morokuma, K.; Melius, C. F.
CORPORATE SOURCE: Cherry L. Emerson Center for Scientific Computation, Emory University, Atlanta, GA, 30322, USA
SOURCE: Journal of Physical Chemistry (1995), 99(18), 6842-8
CODEN: JPCHAX; ISSN: 0022-3654
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 346 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB IR and UV spectroscopic studies of dinitramide show that in covalent state it exists in two forms. In one of these forms, the proton is bound to the central nitrogen atom, HN(NO2)2. In the other form, the proton is equally bound to two oxygen atoms of both nitro groups.

ACCESSION NUMBER: 1995:498077 CAPLUS
DOCUMENT NUMBER: 122:274521
TITLE: Dinitramide and its salts. 4. Molecular structure of dinitramide
AUTHOR(S): Shlyapochnikov, V. A.; Cherskaya, N. O.; Luk'yanov, O. A.; Gorelik, V. P.; Tartakovsky, V. A.
CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (9), 1610-13
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 347 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Prepn. and physicochem. properties of salts of dinitramide HN(NO2)2 with mono- and bivalent metals of Group I, II, VII, and VIII are considered.

ACCESSION NUMBER: 1995:498062 CAPLUS
DOCUMENT NUMBER: 122:280545
TITLE: Dinitramide and its salts. 3. Metallic salts of dinitramide
AUTHOR(S): Luk'yanov, O. A.; Anikin, O. V.; Gorlelik, V. P.; Tartakovsky, V. A.
CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Moscow, 117913, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (9), 1546-9
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 348 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The dinitramide anion shows ambident properties, and its reactions with alkylating agents give N- or O-alkylated products or their mixts. Thus, treating AgN(NO2)2 with RI (R = Me, allyl) in MeCN gave 50% RN(NO2)2 (I; R = Me) and 16% I (R = allyl), resp., as the only products, while EtI and Me2CHI under these conditions gave mixts. of both the corresponding I and RON(O):NNO2 (II), and 1-bromoadamantane gave only the corresponding II. Reactions of alkylated products with bases were studied.

ACCESSION NUMBER: 1995:498037 CAPLUS
DOCUMENT NUMBER: 123:227595
TITLE: Dinitramide and its salts. 5. Alkylation of dinitramide and its salts
AUTHOR(S): Luk'yanov, O. A.; Shlykova, N. I.; Tartakovsky, V. A.
CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Moscow, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (10), 1775-8
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian
OTHER SOURCE(S): CASREACT 123:227595

L4 ANSWER 349 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Theor. ab initio MO methods were used to det. the gas-phase mol. structure (geometry optimization), heat of formation, and to exam. the decompn. mechanisms of NH4NO2 and NH4N(NO2)2 (I). The energies of dissocn. of [NH3][HX] to NH3 and HX were 8-9 kcal/mol for NH4NO2 and 12 kcal/mol for I; the energies of elimination of the first and second NO2 groups from HN(NO2)2 were similar (38-39 kcal/mol). The heats of formation (.DELTA.Hf0) for the most stable isomers of NH4NO2 and gas-phase I were -35.5 kcal/mol (for trans-[NH3][HONO]) and +3.2 kcal/mol for [NH3][HN(NO2)2]. A mechanism for gas-phase decompn. of I was given for the early stages.

ACCESSION NUMBER: 1995:359930 CAPLUS
DOCUMENT NUMBER: 122:137594
TITLE: Theoretical study of the gas phase structure, thermochemistry and decomposition mechanisms of NH4NO2 and NH4N(NO2)2 (ADN).
AUTHOR(S): Mebel, A. M.; Lin, M. C.; Morokuma, K.; Melius, C. F.
CORPORATE SOURCE: Cherry L. Emerson Center Scientific Computation, Emory University, Atlanta, GA, 30322, USA
SOURCE: Chemical and Physical Processes in Combustion (1994) 282-5
CODEN: CPPCD9; ISSN: 0277-1128
PUBLISHER: Combustion Institute
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 350 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Composite propellant formulations comprise a dinitramide salt oxidizer, such as NH4 dinitramide, an energetic binder, such as poly(glycidyl nitrate), a reactive metal, such as Al, and other typical propellant ingredients such as curatives and stabilizers. The disclosed propellant formulations are able to combust Al efficiently, possess high burn rates, and produce little or no HCl exhaust gases.

ACCESSION NUMBER: 1995:314244 CAPLUS
DOCUMENT NUMBER: 122:85017
TITLE: Propellant formulations based on dinitramide salts and energetic binders
INVENTOR(S): Hinshaw, Carol J.; Wardle, Robert B.; Higshsmith, Tom K.
PATENT ASSIGNEE(S): Thiokol Corp., USA
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9424073	A1	19941027	WO 1994-US4270	19940419
W: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KG, KP, KR, KZ, LK, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, UZ, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5498303	A	19960312	US 1993-52035	19930421
AU 9467702	A1	19941108	AU 1994-67702	19940419
EP 695283	A1	19960207	EP 1994-915823	19940419
R: FR, GB, SE				
JP 09501388	T2	19970210	JP 1994-523532	19940419
PRIORITY APPLN. INFO.:			US 1993-52035	19930421
			WO 1994-US4270	19940419

L4 ANSWER 351 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB HN(NO2)2 adds readily to CH2:CHCOR (I; R = H, Me, Ph) to give 53-85.5% RCOCH2CH2N(NO2)2 (II; same R), but did not react with CH2CHCN or I (R = OMe). II (R = MeO) was prepd. in 4 steps from MeO2CCH2CH2NH2.HCl. Treating II (R = H, Me, Ph, MeO) with bases gave dinitramide salts in 66-83% yield.

ACCESSION NUMBER: 1995:302135 CAPLUS
DOCUMENT NUMBER: 122:132517
TITLE: Dinitramide and its salts. 2. Dinitramide in direct and reverse Michael-type reactions
AUTHOR(S): Luk'yanov, O. A.; Konnova, Yu. V.; Klimova, T. A.; Tartakovsky, V. A.
CORPORATE SOURCE: N. D. Zelinsky Inst. Organic Chemistry, Russian Academy Sciences, Russia
SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (7), 1264-6
CODEN: IASKEA
PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
DOCUMENT TYPE: Journal
LANGUAGE: Russian
OTHER SOURCE(S): CASREACT 122:132517

L4 ANSWER 352 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The vapor species over ammonium dinitramide at 60-110.degree. have been examd. using IR matrix (argon) isolation spectroscopy. Some twenty-two absorption bands were identified in the matrix spectra that appeared to be assocd. with a single trapped species, most likely hydrogen dinitramide HN(NO2)2. UV irradn. of these absorption bands resulted in their disappearance, and the appearance of new absorption bands assignable to trans-HNO2, N2O, NO, and (NO)2. A tentative assignment of the 22 vibrational frequencies to HN(NO2)2 has been made assuming Cs symmetry (18 IR active frequencies) which is in reasonable agreement with a recent theor. calcn. of these vibration frequencies. No evidence was obtained in this study for the existence of structural isomers of hydrogen dinitramide, notably the aci-form N(NO2)(NOOH), which recent theor. calcns. of R. J. Schmitt and J. C. Bottaro (1989) suggest is only slightly less stable than the secondary amine structure.

ACCESSION NUMBER: 1995:222010 CAPLUS
DOCUMENT NUMBER: 122:34515
TITLE: Vaporization of NH4N(NO2)2 and tentative identification of HN(NO2)2 by IR matrix isolation spectroscopy
AUTHOR(S): Snelson, A.; Tulis, A. J.; Heberlein, D. C.; Patel, D. L.
CORPORATE SOURCE: IIT Research Institute, Chicago, IL, 60616-3799, USA
SOURCE: Proceedings of the International Pyrotechnics Seminar (1994), 19TH, 531-44
CODEN: PPYSD7; ISSN: 0270-1898
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 353 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Various methods of prepn. of dinitroamide salts from compds. with general formula XCH2CH2N(NO2)2 (X = groups facilitating a proton split-off in the .alpha. position) are presented, and different simple and complex dinitroamide salts were synthesized. Structures and physicochem. properties of the obtained compds. were also detd.

ACCESSION NUMBER: 1995:192659 CAPLUS
DOCUMENT NUMBER: 122:59471
TITLE: Synthesis of dinitroamide salts
AUTHOR(S): Tartakovsky, Vladimir A.; Luk'yanov, Oleg A.
CORPORATE SOURCE: N.D. Zelinsky Institute Organic Chemistry, Russian Academy Sciences, Moscow, 117913, Russia
SOURCE: International Annual Conference of ICT (1994), 25TH(ENERGETIC MATERIALS-ANALYSIS, CHARACTERIZATION AND TEST TECHNIQUES), 13/1-13/9
CODEN: IACIEQ; ISSN: 0722-4087
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 354 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Unavailable

ACCESSION NUMBER: 1994:560334 CAPLUS
DOCUMENT NUMBER: 121:160334
TITLE: The physical and chemical processes governing CO2 laser-induced pyrolysis and combustion of the solid propellants RDX, ADN, XM39, and M43
AUTHOR(S): Fetherolf, Barry Lynn
CORPORATE SOURCE: Pennsylvania State Univ., PA, USA
SOURCE: (1993) 238 pp. Avail.: Univ. Microfilms Int., Order No. DA9414276
From: Diss. Abstr. Int. B 1994, 54(12, Pt. 1), 6417
DOCUMENT TYPE: Dissertation
LANGUAGE: English

L4 ANSWER 355 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The need to pack more power with less wt. into less space in tomorrows weapons drove this program for the synthesis of super energetic materials. The original impetus was a program based solely on the energetic properties of cubane. However, as a course of the studies here and in a parallel sponsored program (SRI project no. 6654, ONR contract no. N00014-88-C-0537), an alternative oxidizer to cubane based systems, the dinitramide salts are discovered and developed. The developments in the synthesis of new oxidizers based on cubane and dinitramide are reported. New methods are developed for the functionalization of the cubane nucleus and synthesized new energetic cubanes. Several new routes are developed for the synthesis of the dinitramino group, (N(NO2)2). The work on the prepn. of the dinitramide group led to the synthesis of the dinitramide ion, and as a consequence ammonium dinitramide. This synthesis is used to prep. cubane ammonium dinitramide salts. Cubane-1,4bis-(ammonium dinitramide) and cubane 1,2,4,7-tetrakis(ammonium dinitramide) and several other dinitramide salts are synthesized.

ACCESSION NUMBER: 1994:512782 CAPLUS
DOCUMENT NUMBER: 121:112782
TITLE: Synthesis of cubane based energetic molecules
AUTHOR(S): Schmitt, R. J.; Bottaro, J. C.; Penwell, P. E.
CORPORATE SOURCE: SRI Int., Menlo Part, CA, USA
SOURCE: Report (1993), Order No. AD-A263271, 139 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1993, 93(15), Abstr. No. 345,979
DOCUMENT TYPE: Report
LANGUAGE: English

L4 ANSWER 356 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Nitrogen dioxide (NO2.bul.), produced by photodecompn. (.lambda. > 200 nm)
of polycryst. sodium nitrite (Na+NO2-), polycryst. energetic oxidizers, ammonium nitrate(NH4+NO3-), and ammonium dinitramide [NH4+N(NO2)2-], and the polycryst. cyclic nitramine cyclotrimethylenetrinitramine (RDX), was studied by ESR (ESR) spin trapping at room temp. (300 K) and by matrix isolation ESR spectroscopy at 77 K. In spin trapping expts., the aci anion of nitromethane (CH2:NO2-) was used to spin trap NO2.bul. produced by photodecompn. of these energetic compds. in basic (pH > 13) aq. solns. at room temp. The resulting NO2.bul. adduct radical is the dinitromethyl anion radical (-NO2-CH:NO2.bul.-) which gives a 10-line ESR spectrum. For
equimolar starting concns. of each compd., the ESR signal intensities of the DNM.bul. spectrum varied according to NaNO2 > NH4N(NO2)2 > NH4NO3 > RDX. From kinetics of DNM.bul. formation, the suggested dominant mechanisms of NO2.bul. formation are NO2- + OH.bul. .fwdarw. NO2.bul. + OH- for compds. NaNO2 and RDX and NO3- .fwdarw. NO2.bul. + O- for NH4NO3 and NH4N(NO2)2. Two other cyclic nitramines, cyclotetramethylenetetranitramine(HMX) and hexanitrohexaazaisowurtzitane (HNIW), were confined to give weak DNM.bul. adduct ESR signals. In matrix
isolation ESR expts. at 77 K, the rate of formation of NO2.bul. is zero-order for NaNO2 and NH4NO3 but first-order for NH4N(NO2)2 under the photolysis conditions of this expt., suggesting that, in the solid phase, NO2.bul. is formed by different mechanisms in the two ammonium salts.
ACCESSION NUMBER: 1994:469266 CAPLUS
DOCUMENT NUMBER: 121:69266
TITLE: Spin Trapping of Nitrogen Dioxide from Photolysis of Sodium Nitrite, Ammonium Nitrate, Ammonium Dinitramide, and Cyclic Nitramines
AUTHOR(S): Pace, M. D.
CORPORATE SOURCE: Code 6120, Naval Research Laboratory, Washington, DC, 20375-5342, USA
SOURCE: Journal of Physical Chemistry (1994), 98(25), 6251-7
CODEN: JPCHAX; ISSN: 0022-3654
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 357 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Ammonium dinitramide salt having the formula NH4+N(NO2)2- useful as a stable oxidizer for solid fuel rocket propellant or explosive is manufd. by reacting NH3 and a nitronium-contg. compd. at from -20.degree.C to -120.degree.C. The nitronium-contg. compd. may be either a covalently bonded compd. contg. a NO2- group or a nitronium salt having the formula (NO2+)nX-n, where X is the anion of the nitronium salt and n = 1-2. The product is useful as a oxidizer for propellants or explosives.
ACCESSION NUMBER: 1994:460802 CAPLUS
DOCUMENT NUMBER: 121:60802
TITLE: Manufacture of ammonium dinitramide salt for rock propellant
INVENTOR(S): Schmitt, Robert J.; Bottaro, Jeffrey C.; Penwell, Paul
E.; Bomberger, David C.
PATENT ASSIGNEE(S): SRI International, USA
SOURCE: U.S., 7 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5316749	A	19940531	US 1991-737757	19910730

PRIORITY APPLN. INFO.: US 1991-737757 19910730

L4 ANSWER 358 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Pressure-temp.-reaction phase diagrams were presented for several nitramine compds., including hexanitrohexaazaisowurtzitane, RDX, ammonium dinitramide, and p-nitroaniline. A diamond anvil cell was used in conjunction with optical polarizing light microscopy, Fourier-transform IR
spectroscopy, energy dispersive x-ray diffraction, and micro-FT-Raman spectroscopy to det. these diagrams. A description was given of the diamond anvil cell and the assocd. techniques employed.
ACCESSION NUMBER: 1994:438722 CAPLUS
DOCUMENT NUMBER: 121:38722
TITLE: Pressure/temperature/reaction phase diagrams for several nitramine compounds
AUTHOR(S): Russell, T. P.; Miller, P. J.; Piermarini, G. J.; Block, S.
CORPORATE SOURCE: Nav. Surf. Warf. Cent., Silver Spring, MD, 20903-5000, USA
SOURCE: Materials Research Society Symposium Proceedings (1993), 296(Structure and Properties of Energetic Materials), 199-213
CODEN: MRSPDH; ISSN: 0272-9172
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 359 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Six energetic salts of 3,3-dinitroazetidinium (DNAZ) were prepd. and characterized: (1) nitrate, (2) 2,4-dinitroimidazolate, (3) 4,4',5,5'-tetranitro-2,2'-biimidazolate, (4) dinitramidate, (5), 5-nitro-1,2,4-triazol-3-onate, and (6) 3,5-dinitro-1,2,4-triazolate. Results from initial characterization, small-scale sensitivity tests, heats of formation, d., and 13C-nmr spectra were reported. The DNAZ nitrate was easily dehydrated to 1,3,3-trinitroazetidine.
ACCESSION NUMBER: 1994:413215 CAPLUS
DOCUMENT NUMBER: 121:13215
TITLE: Synthesis and initial characterization of some energetic salts of 3,3-dinitroazetidine
AUTHOR(S): Hiskey, Michael A.; Stinecipher, Mary M.; Brown, James
E.
CORPORATE SOURCE: Los Alamos Natl. Lab., Univ. California, Los Alamos, NM, 87545, USA
SOURCE: Journal of Energetic Materials (1993), 11(3), 157-65
CODEN: JOEMDK; ISSN: 0737-0652
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 360 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Free-radical thermal and photochem. decompn. products of ammonium dinitramide (ADN) were compared to those of cyclic nitramines (RDX, HMX, and HNIW) and to ammonium perchlorate (AP). Photochem. formation of NO2 from UV photolysis of ADN at 77 K followed first-order kinetics, whereas, zero-order NO2 formation was obsd. from the cyclic nitramines. Mechanisms were suggested for ADN decompn. A general trend of cyclic nitramines to thermally decomp. forming nitroxide radicals was supported by 15N-ring-labeled HNIW results. ADN thermally decomps. at 190.degree. to form free-radical reaction products in soln. with tetrahydrothiophene-1,1-dioxide.

ACCESSION NUMBER: 1994:413203 CAPLUS
DOCUMENT NUMBER: 121:13203
TITLE: Nitrogen radicals from thermal and photochemical decomposition of ammonium perchlorate, ammonium dinitramide, and cyclic nitramines
AUTHOR(S): Pace, M. D.
CORPORATE SOURCE: Nav. Res. Lab., Washington, DC, 20375-5320, USA
SOURCE: Materials Research Society Symposium Proceedings (1993), 296(Structure and Properties of Energetic Materials), 53-60
CODEN: MRSPDH; ISSN: 0272-9172
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 361 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB In the course of this study, the authors have accomplished the synthesis of a new, stable class of dinitramide salts that will have both fundamental scientific interest and practical applications. The authors have also developed a new type of condensation reaction for the synthesis of cage compds. and prepd. new clathrates of CL-20 with significantly more energy than pure CL-20. The dinitramide salts are based on a newly discovered inorg. anion known as the dinitramide anion, N(NO2)2-. The dinitramide anion is a uniquely stable, high oxygen d. grouping that can be prepd. in many different combinations, including the ammonium salts.

ACCESSION NUMBER: 1994:323292 CAPLUS
DOCUMENT NUMBER: 120:323292
TITLE: Development of new protecting/leaving groups and application to the synthesis of cage nitramines
AUTHOR(S): Schmitt, R. J.; Bottaro, J. C.; Penwell, P. E.
CORPORATE SOURCE: SRI Int., Menlo Park, CA, USA
SOURCE: Report (1993), Order No. AD-A261496, 110 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1993, 93(14), Abstr. No. 340, 225
DOCUMENT TYPE: Report
LANGUAGE: English

L4 ANSWER 362 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB NH4NO3 is phase-stabilized against phase IV and phase III transitions and the undesired vol. changes assocd. with that phase change by adding an effective amt. of .gtoreq.1 metal dinitramide salt having the formula MXn wherein M is a metal cation, X is a dinitramide anion, and n is 1, 2 or 3.

The phase-stabilized ammonium nitrate is useful in energetic applications such as solid propellants and explosives.

ACCESSION NUMBER: 1994:274702 CAPLUS
DOCUMENT NUMBER: 120:274702
TITLE: Manufacture of phase-stabilized ammonium nitrate for explosives
INVENTOR(S): Highsmith, Thomas K.; Hinshaw, Carol J.; Wardle, Robert B.
PATENT ASSIGNEE(S): Thiokol Corp., USA
SOURCE: U.S., 7 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5292387	A	19940308	US 1993-10391	19930128
WO 9417015	A1	19940804	WO 1993-US11408	19931130
W: CA				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 689527	A1	19960103	EP 1994-902368	19931130
EP 689527	B1	19970312		
R: DE, FR, GB, SE				

PRIORITY APPLN. INFO.: US 1993-10391 19930128
WO 1993-US11408 19931130

L4 ANSWER 363 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The authors have used a non-local d. functional procedure (DF/GGA/DZVPP) to compute the structure of the dinitramide anion N(NO2)-2 and the energetics of some possible decompn. steps. The structures are in good agreement with crystallog. results, and show the NO2 groups to be rotated out of the N-N-N plane, with a considerable difference between the two N-N-O angles of each NO2 group. Of three possible N-N bond breaking reactions, the authors find that the least energy is required to yield NNO-2 and NO2 (49.8kcalmol-1). The authors suggest that these products have the option of forming a loosely bound complex.

ACCESSION NUMBER: 1994:200571 CAPLUS
DOCUMENT NUMBER: 120:200571
TITLE: Density functional study of the structure and some decomposition reactions of the dinitramide anion N(NO2)2-
AUTHOR(S): Politzer, Peter; Seminario, Jorge M.; Concha, Monica C.; Redfern, Paul C.
CORPORATE SOURCE: Department of Chemistry, University of New Orleans, New Orleans, LA, 70148, USA
SOURCE: THEOCHEM (1993), 106(1-3), 235-40
CODEN: THEODJ; ISSN: 0166-1280
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 364 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB MP2/6-31G* geometric optimizations combined with non-local d. functional energy calcns. were used to det. the structure of dinitraminic acid, HN(NO2)2, and the energetics of several processes that may be involved in its decompn. Such processes include bond cleavage and protonation-induced fragmentation.
ACCESSION NUMBER: 1994:80863 CAPLUS
DOCUMENT NUMBER: 120:80863
TITLE: Computational study of the structure of dinitraminic acid, HN(NO2)2, and the energetics of some possible decomposition steps
AUTHOR(S): Politzer, Peter; Seminario, Jorge M.
CORPORATE SOURCE: Department of Chemistry, University of New Orleans, New Orleans, LA, 70148, USA
SOURCE: Chemical Physics Letters (1993), 216(3-6), 348-52
CODEN: CHPLBC; ISSN: 0009-2614
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 365 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Dinitramide salts having the formula M(N(NO2)2)n where M is selected from a metal ion, H, and N1-8-contg. cation, and n is the charge of M are manufd. by reacting an alkoxycarbonyl nitroamide with a nitronium-contg. compd. and treating the reaction mixt. with a base. The reaction mixt. forms, if treated with an alc., a dinitramidic acid (HN(NO2)2). The products are stable oxidizers for use in solid rocket propellants or explosive formulations.
ACCESSION NUMBER: 1994:11330 CAPLUS
DOCUMENT NUMBER: 120:11330
TITLE: Manufacture of dinitramide salt or acid as an oxidizer for solid propellant
INVENTOR(S): Schmitt, Robert J.; Bottaro, Jeffrey C.; Penwell, Paul E.; Bomberger, David C.
PATENT ASSIGNEE(S): SRI International, USA
SOURCE: PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9316002	A1	19930819	WO 1993-US752	19930127
W: CA, JP, KR				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5415852	A	19950516	US 1992-968928	19921030
EP 624148	A1	19941117	EP 1993-904688	19930127
EP 624148	B1	19960424		
R: DE, FR, GB, IT, NL, SE				
JP 07503449	T2	19950413	JP 1993-513559	19930127
PRIORITY APPLN. INFO.:			US 1992-827247	19920129
			US 1992-968928	19921030
			WO 1993-US752	19930127

L4 ANSWER 366 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB This qual. study examines the response of NH4N(NO2)2 (I) to thermal stress at low heating rates, by using residual gas mass spectrometry and FTIR spectroscopy of a thin cryogenic condensate film from pyrolysis on a KCl window. The results were compared under similar conditions with the behavior of NH4NO3 and NH2NO2 as ref. materials. NH4NO3 decomps. into HNO3 and NH3 at 182.degree. and is regenerated on the cold cryostat surface. HNO3 undergoes presumably heterogeneous loss to a minor extent such that the condensed film of NH4NO3 contains occluded NH3. Nitramide undergoes efficient heterogeneous decompn. to N2O and H2O even at ambient temp. so that pyrolysis expts. at higher temps. are not possible. However, the presence of nitramide can be monitored by mass spectrometry at its mol. ion (m/e 62). I pyrolysis is dominated by decompn. into NH3 and HN(NO2)2 (II) in analogy with NH4NO3, with a max. rate of decompn. at .ltorsim.155.degree.. The two vapor phase components regenerate I on the cold cryostat surface in addn. to deposition of the pure acid II and H2O. Condensed-phase II is stable for indefinite periods of time at ambient temp. and vacuum conditions, whereas fast heterogeneous decompn. of II at higher temp. leads to N2O and HNO3. The HNO3 then undergoes fast (heterogeneous) decompn. in some expts. Gas-phase II also undergoes fast heterogeneous decompn. to NO and other products, probably on the internal surface (.apprx.60.degree.) of the vacuum chamber before mass spectrometric detection.
ACCESSION NUMBER: 1993:520698 CAPLUS
DOCUMENT NUMBER: 119:120698
TITLE: The thermal decomposition of the new energetic material ammonium dinitramide (NH4N(NO2)2) in relation to nitramide (NH2NO2) and NH4NO3
AUTHOR(S): Rossi, Michel J.; Bottaro, Jeffrey C.; McMillen, Donald F.
CORPORATE SOURCE: Chem. Lab., SRI Int., Menlo Park, CA, 94025, USA
SOURCE: International Journal of Chemical Kinetics (1993), 25(7), 549-70
CODEN: IJCKBO; ISSN: 0538-8066
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 367 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A study of the thermal decompn. of ammonium dinitramide (ADN) was reported as an energetic material and for comparison, ammonium nitrate (AN) and nitramide (NH2O2). Studies were also performed with RDX and with AgN(NO2)CH2CN, which was tested as a source of the suspected RDX intermediate CH2:NNO2. The former portion of the work was included as an appendix. Low-pressure pyrolysis of ADN showed acid-base dissocn. like AN, but it also resulted in some decompn. to N2O, NO, and water. The onset of evolution of these species was at 90.degree.; as in the case of AN, an explosive event was noted at 174.degree., which was .apprx.80.degree. higher than the m.p. of ADN and 15.degree. higher than thermal decompn. in a differential scanning calorimeter.
ACCESSION NUMBER: 1993:520688 CAPLUS
DOCUMENT NUMBER: 119:120688
TITLE: Low pressure thermal decomposition studies of selected nitramine and dinitramine energetic materials
AUTHOR(S): Rossi, M. J.; McMillen, D. F.; Golden, D. M.
CORPORATE SOURCE: SRI Int., Menlo Park, CA, USA
SOURCE: Report (1992), SRI-MP-281; Order No. AD-A247972, 89 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1992, 92(13), Abstr. No. 235,955
DOCUMENT TYPE: Report
LANGUAGE: English

L4 ANSWER 368 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The recently synthesized NH4+N(NO2)2- (ADN) is an ionic compd. ADN was studied using high-energy Xe atoms to sputter ions directly from the surface of the neat cryst. solid. Tandem mass spectrometric techniques were used to study dissocn. pathways and products of the sputtered ions. Among the sputtered ionic products were NH4+, NO+, NO2+, NO2-, N2O2-.bul., N3O4- and an unexpected high abundance of NO3-. Tandem mass spectra of N(NO2)2- reveal the uncommon situation where a product ion (NO3-) is formed in high relative abundance from metastable parent ions but is formed in low relative abundance from collisionally activated parent ions. The NO3- is formed in the gas phase by a rate-detg. isomerization of the N(NO2)2- that proceeds through a 4-centered transition state. The formation of the strong gas-phase acid, dinitraminic acid (HN3O4), the conjugate acid of N(NO2)2-, occurs by dissocn. of protonated ADN and by dissocn. of ADN aggregate ions [NH4{N(NO2)2}nNH4+ (n = 1-30).

ACCESSION NUMBER: 1993:439623 CAPLUS
DOCUMENT NUMBER: 119:39623
TITLE: Sputtered ammonium dinitramide: tandem mass spectrometry of a new ionic nitramine
AUTHOR(S): Doyle, Robert J., Jr.
CORPORATE SOURCE: Chem. Div., Nav. Res. Lab., Washington, DC, 20375-5000, USA
SOURCE: Organic Mass Spectrometry (1993), 28(2), 83-91
CODEN: ORMSBG; ISSN: 0030-493X
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 369 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ab initio calcns. of the structure and thermochem. of trinitramide, N(NO2)3, are reported. A vibrationally stable C3 structure having 1.545 .ANG. N-N bond lengths is found at the MP2/6-31G* level of theory. The heat of formation of trinitramide is 59 kcal/mol. Thermal decompn. of trinitramide most likely occurs via N-N bond cleavage, which is estd. to required 26 kcal/mol.

ACCESSION NUMBER: 1993:434680 CAPLUS
DOCUMENT NUMBER: 119:34680
TITLE: Structure and stability of trinitramide
AUTHOR(S): Montgomery, J. A., Jr.; Michels, H. H.
CORPORATE SOURCE: United Technol. Res. Cent., East Hartford, CT, 06108, USA
SOURCE: Journal of Physical Chemistry (1993), 97(26), 6774-5
CODEN: JPCHAX; ISSN: 0022-3654
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 370 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Five stable conformations of hydrogen dinitramide were identified through ab initio electronic structure calcns. The most stable form has a secondary amine structure, HN(NO2)2, and a calcd. heat of formation (0 K) of 28.4 kcal/mol. Four stable inorg. acid structures are found to lie 7.9-9.7 kcal/mol higher in energy. The predicted enthalpy of deprotonation of N(NO2)(NOOH) is .DELTA.Hacid(298 K) = 302.6 .+-. 2 kcal/mol, making this one of the strongest known gas-phase inorg. acids. Authors est. the electron affinity of the N(NO2)2 radical to be 5.0 .+-. 0.5 eV and the N-N bond dissocn. energy of HN(NO2)2 to be 48 .+-. 8 kcal/mol. It is shown that unimol. decompn. is the most likely low-energy decompn. mechanism for hydrogen dinitramide.

ACCESSION NUMBER: 1993:434661 CAPLUS
DOCUMENT NUMBER: 119:34661
TITLE: On the structure and thermochemistry of hydrogen dinitramide
AUTHOR(S): Michels, H. H.; Montgomery, J. A., Jr.
CORPORATE SOURCE: United Technol. Res. Cent., East Hartford, CT, 06108, USA
SOURCE: Journal of Physical Chemistry (1993), 97(25), 6602-6
CODEN: JPCHAX; ISSN: 0022-3654
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 371 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ab initio SCF MO calcns. have been performed for a series of nitramine mols. Calcns. were conducted on trinitramine, methyldinitramine, methylchloronitramine and trimethylamine using Pople's 6-31G and 6-31G* basis sets. Gas phase geometries for these mols. were detd. by a min. energy criterion using gradient techniques. The results are in qual. agreement with the geometries derived from electron diffraction studies and microwave spectroscopy. The extra-long N-N bonds in methyldinitramine and methylchloronitramine were not computed accurately at the SCF level of theory and it was shown that these bonds become longer if electron correlation is included at the second-order Moeller-Plesset level. Computations were performed for the heat of formation for trinitramine using Pople's isodesmic reaction concept and compared with a value obtained using an additivity rule.

ACCESSION NUMBER: 1993:220173 CAPLUS
DOCUMENT NUMBER: 118:220173
TITLE: An ab initio study of some nitramine molecules
AUTHOR(S): Zirl, David M.; Vladimiroff, Theodore
CORPORATE SOURCE: US Army Armament, Res. Dev. Eng. Cent., Picatinny Arsenal, NJ, 07806, USA
SOURCE: THEOCHEM (1993), 98, 291-7
CODEN: THEODJ; ISSN: 0166-1280
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 372 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Optimized HF/3-21G* geometries were computed for s-tetrazine (I), benzene,
and the title derivs. These structures were used to calc. the electrostatic potentials and av. local ionization energies of these mols. HF/3-21G* and MP2/6-31G* geometries were also computed for pentazine, which is as yet unknown, and shown to correspond to energy min. The electrostatic potential on the surface of I is strongly neg. above the electron-attracting ring nitrogen atoms and pos. above the ring and the hydrogen atoms, fully consistent with the structures of complexes that I is known to form with other mols. Previously developed relations were used to est. the Hammett consts. .sigma.m and .sigma.p of the N(NO2)2 group and the pKa values of I, its dinitroamino and chloro derivs., and pentazine. N(NO2)2 is strongly electron-withdrawing through induction and
more weakly donating through resonance. In the I derivs., the electron-attracting power of the ring nitrogens significantly increases the extents of conjugation of the N(NO2)2 and Cl substituents, both resonance donors. However, the dominant effect of these substituents upon
the ring is inductive deactivation toward electrophiles.
ACCESSION NUMBER: 1993:123811 CAPLUS
DOCUMENT NUMBER: 118:123811
TITLE: Computational analysis of the dinitroamino and chloro derivatives of benzene and s-tetrazine
AUTHOR(S): Politzer, Peter; Murray, Jane S.; Seminario, Jorge M.;
Miller, Richard S.
CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148,
USA
SOURCE: THEOCHEM (1992), 94, 155-70
CODEN: THEODJ; ISSN: 0166-1280
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 373 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The rapid pyrolysis chem. of films of ammonium nitrate (AN), NH4NO3, and ammonium dinitramide (ADN), NH4[N(NO2)2], at temps. approximating a burning surface is described by the use of T-jump/FTIR spectroscopy. The sequence of appearance and amts. of each gas product combined with the net
endothermicity and exothermicity of the process at each time enables consistent reaction schemes to be developed. The decompn. of the condensed phase of AN is net endothermic up to at least 33 atm. Although dissociative sublimation and the formation of N2O and H2O dominate the overall process, the superposition of two addnl. reactions is needed to account for all of the products obsd. from AN. ADN becomes highly exothermic very early in the decompn. process. The superposition of two stoichiometric reaction branches explains this behavior. The spectra and thermal responses are consistent with the reaction of NH3 with NO2 being the major source of heat released during the decompn. of AN above 33 atm and ADN at 1 atm and higher.
ACCESSION NUMBER: 1993:62651 CAPLUS
DOCUMENT NUMBER: 118:62651
TITLE: Thermal decomposition of energetic materials. 58. Chemistry of ammonium nitrate and ammonium dinitramide
near the burning surface temperature
AUTHOR(S): Brill, T. B.; Brush, P. J.; Patil, D. G.
CORPORATE SOURCE: Dep. Chem., Univ. Delaware, Newark, DE, 19716, USA
SOURCE: Combustion and Flame (1993), 92(1-2), 178-86
CODEN: CBFMAO; ISSN: 0010-2180
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 374 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB An ab initio SCF MO approach was used to compute the 3-21G//STO-3G* and STO-5G//STO-3G* electrostatic potentials and av. local ionization energies
of 17 para-substituted anilines. The most neg. potentials (Vmin) and the local surface ionization energy min. (Imin) assocd. with the amine nitrogen lone pairs are highly sensitive indicators of the electron-donating and electron-attracting tendencies of the para substituents. Linear relationships were found between the 3-21G//STO-3G* amine nitrogen Vmin and Imin and the .sigma.p0 Hammett consts. of the substituents; the correlation coeffs. were 0.99. Correlations of slightly
lower quality were found between Vmin, Imin, and .sigma.p-, .sigma.p, and pKa. Ests. of previously unknown .sigma.p0 and pKa values were given. The presence of ring carbon Imin meta to the substituent also provides a predictive capability for determining .sigma.m values.
ACCESSION NUMBER: 1993:38219 CAPLUS
DOCUMENT NUMBER: 118:38219
TITLE: Calculated electrostatic potentials and local surface ionization energies of para-substituted anilines as measures of substituent effects
AUTHOR(S): Haeberlein, Markus; Murray, Jane S.; Brinck, Tore; Politzer, Peter
CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148,
USA
SOURCE: Canadian Journal of Chemistry (1992), 70(8), 2209-14
CODEN: CJCHAG; ISSN: 0008-4042
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 375 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The basicity, reactivity, electron-binding energy and collision-induced dissocn. of two novel nitro species, the dinitramide ion [N(NO2)2-] and the nitroacetylide ion (O2NC.tplbond.C-), have been examd. using the tandem flowing afterglow-selected-ion flow tube. Dinitraminic acid is among the strongest known gas phase acids with .DELTA.H.degree.acid .ltoreq. 310 kcal mol-1. The conjugate base, dinitramide anion, has a high electron binding energy, is extremely unreactive and is a very poor nucleophile. Collision-induced dissocn. of dinitramide anion generates the O2N:N- anion. Nitroacetylene is a moderately strong acid with .DELTA.H.degree.acid = 354 .+-. 4 kcal mol-1; this value is similar to those of other nitro compds. and substituted acetylenes. The nitroacetylide ion is generally unreactive but exhibits a rich chem. upon reaction with hydrogen sulfide. The anion has a high electron binding energy and generates four ions upon collision-induced dissocn., ONC-, C2-,
C2O-, and CN-.
ACCESSION NUMBER: 1993:21903 CAPLUS
DOCUMENT NUMBER: 118:21903
TITLE: Gas phase chemistry of dinitramide and nitroacetylide ions
AUTHOR(S): Schmitt, Robert J.; Krempp, Michele; Bierbaum, Veronica M.
CORPORATE SOURCE: Chem. Lab., SRI Int., Menlo Park, CA, 94025, USA
SOURCE: International Journal of Mass Spectrometry and Ion Processes (1992), 117, 621-32
CODEN: IJMPDN; ISSN: 0168-1176
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 376 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A N,N-dinitramide salt having the formula MN(NO2)2 where M is a cation selected from the class consisting of a metal ion and a N-contg. ion is prepd. for the high-temp. stable rocket fuels. It is prepd. by reacting either (1) a dinitramine compd. formed from an aliph. isocyanate using NO2BF4 and HNO3 in acetonitrile as the nitrating system or (2) a dinitraminic acid formed by nitrating a nitramide with NO2BF4 with a metal-contg. compd. or N-contg. compd. and a MX salt where X is selected from fluoride, chloride, hydroxyl, carbonate, alkoxide, or carboxyl anion.

ACCESSION NUMBER: 1992:217513 CAPLUS
DOCUMENT NUMBER: 116:217513
TITLE: Dinitramide salts and method of making same
INVENTOR(S): Bottaro, Jeffrey C.; Schmitt, Robert J.; Penwell, Paul
E.; Ross, David S.
PATENT ASSIGNEE(S): SRI International, USA
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9119669	A1	19911226	WO 1991-US4268	19910614
W: CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
US 5254324	A	19931019	US 1990-540020	19900618
CA 2059654	AA	19911219	CA 1991-2059654	19910614
CA 2059654	C	19980616		
EP 487693	A1	19920603	EP 1991-911917	19910614
EP 487693	B1	19950118		
R: DE, FR, GB, IT, SE				
JP 05500795	T2	19930218	JP 1991-511276	19910614
JP 2519621	B2	19960731		

PRIORITY APPLN. INFO.: US 1990-540020 19900618
WO 1991-US4268 19910614

L4 ANSWER 377 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The title compds. having the formula MN(NO2)2 where M is a cation selected from the class consisting of a metal ion and a N-contg. ion are prepd. by contacting a carbonate with a nitrating agent to form an intermediate HN(NO2)2 and neutralizing the intermediate with a compd. selected from NH3, N2H4, a primary amine, a secondary amine, and a salt AX where A is a metal ion or a N-contg. ion and X is an anion selected from a fluoride, chloride, hydroxyl, carbonate, alkoxide, and carboxyl. The dinitramide salts prepd. are useful as oxidizers in rocket fuels with high-temp. stability.

ACCESSION NUMBER: 1992:217512 CAPLUS
DOCUMENT NUMBER: 116:217512
TITLE: Manufacture of dinitramide salts for rocket propellants
INVENTOR(S): Bottaro, Jeffrey C.; Schmitt, Robert J.; Penwell, Paul
E.; Ross, David S.
PATENT ASSIGNEE(S): SRI International, USA
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9119670	A1	19911226	WO 1991-US4277	19910614
W: CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
US 5198204	A	19930330	US 1990-539647	19900618
CA 2064472	AA	19911219	CA 1991-2064472	19910614
EP 487690	A1	19920603	EP 1991-911719	19910614
R: DE, FR, GB, IT, SE				
JP 05500796	T2	19930218	JP 1991-511528	19910614

PRIORITY APPLN. INFO.: US 1990-539647 19900618
WO 1991-US4277 19910614

L4 ANSWER 378 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Ab initio SCF calcn. of the structures of N(NO2)2-(I), HN(NO2)2 (II), and N(NO2)3 were carried out. Their stability in, the proton affinity of I as a measure of the acidity of II< and the interaction energy of I with NO2+ to yield N(NO2)3 were computed. The proton affinity of I was greater than that of NO2-.

ACCESSION NUMBER: 1992:113725 CAPLUS
DOCUMENT NUMBER: 116:113725
TITLE: Computational analyses of structural properties of the dinitramide ion, N(NO2)2(-), and some related molecules: dinitroamine and trinitroamine
AUTHOR(S): Redfern, P. C.; Politzer, P.
CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, USA
SOURCE: Report (1990), Order No. AD-A228 139, 9 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1991, 91(9), Abstr. No. 121,792
DOCUMENT TYPE: Report
LANGUAGE: English

L4 ANSWER 379 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB An ab initio self-consistent-field MO investigation of the rotational energy barriers of the N-NO2 bonds in a series of aliph. and alicyclic nitramines has been carried out. Structures, energies, dipole moments, and electrostatic potentials of the ground and rotational transition states of these nitramines have been presented and compared, with the aim of exploring the dependence of the NO2 rotational energy barrier upon structural and electronic features of these mols. For the mononitramines, the rotational barrier is greater when the C-N(NO2)-C portion of the ground-state mol. is planar (or nearly so) than when it is pyramidal. This can be viewed as a result of the amine lone pair being more highly delocalized in the former instance; more energy is then required to rotate the NO2 group and disrupt this higher degree of conjugation. Structural, electrostatic potential, and dipole moment data support this interpretation. Results for two dinitrohydrazines indicate that the second amine nitrogen and nitro group introduce significant new factors, including a suggested competitive conjugation.

ACCESSION NUMBER: 1991:582294 CAPLUS
DOCUMENT NUMBER: 115:182294
TITLE: Computational study of the nitrogen-nitro rotational energy barriers in some aliphatic and alicyclic nitramines
AUTHOR(S): Habibollahzadeh, Dariush; Murray, Jane S.; Redfern, Paul C.; Politzer, Peter
CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148, USA
SOURCE: Journal of Physical Chemistry (1991), 95(20), 7702-9
CODEN: JPCHAX; ISSN: 0022-3654
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 380 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The treatment of aliph. nitriles with O2NBF4/HNO3 in MeCN gave N,N-dinitroalkanamines. Thus, treatment of BuNCO with O2NBF4/HNO3 in MeCN gave 35% N,N-dinitrobutanamine.

ACCESSION NUMBER: 1991:558454 CAPLUS
DOCUMENT NUMBER: 115:158454
TITLE: A new synthesis of alkyl-N,N-dinitramines by direct nitration of isocyanates
AUTHOR(S): Bottaro, Jeffrey C.; Penwell, Paul E.; Schmitt, Robert J.
CORPORATE SOURCE: Org. Chem. Program, SRI Int., Menlo Park, CA, 94025, USA
SOURCE: Synthetic Communications (1991), 21(7), 945-9
CODEN: SYNCAV; ISSN: 0039-7911
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 115:158454

L4 ANSWER 381 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Av. local ionization energies [.hivin.I(r)] have been computed on the mol. surfaces of the conjugate bases for four different groups of carbon and oxygen acids, using an ab initio self-consistent-field MO approach. The lowest surface .hivin.I(r) [IS,min) are generally found on the atom from which the proton has been abstracted. Good linear relationships between aq. acidities and .hivin.IS,min are found for the different groups. A single linear relationship between pKs and .hivin.IS,min that includes the four groups and three addnl. nitrogen acids also exists; the correlation coeff. is 0.97. This provides a means for predicting the pKa's of a large variety of carbon, oxygen, and nitrogen acids.

ACCESSION NUMBER: 1991:491388 CAPLUS
DOCUMENT NUMBER: 115:91388
TITLE: Relationships between the aqueous acidities of some carbon, oxygen, and nitrogen acids and the calculated surface local ionization energies of their conjugate bases
AUTHOR(S): Brinck, Tore; Murray, Jane S.; Politzer, Peter
CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148, USA
SOURCE: Journal of Organic Chemistry (1991), 56(17), 5012-15
CODEN: JOCEAH; ISSN: 0022-3263
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 382 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Carcinogenic nitrosamines are removed from melts or solns. of dinitroaniline herbicides (Markush given) by treatment with sulfo-contg. cation-exchange resins, at 90-130.degree.. A trifluralin melt (140.degree.), contg. 740 ppm dipropylnitrosoamine was treated, at 100.degree., with 16 g sulfo-contg. cation-exchange resin. After 3 h, the dipropylnitrosamine content was decreased to 0.8 ppm.

ACCESSION NUMBER: 1990:50604 CAPLUS
DOCUMENT NUMBER: 112:50604
TITLE: Removal of nitrosamine impurities from dinitroaniline herbicides
INVENTOR(S): Barabas, Mihaly; Bacskai, Gyorgy; Boros, Peter; Fazekas, Andras, Mrs.; Halasz, Gyorgy, Mrs.; Lukacs, Laszlo; Magyari, Sandor; Ronkos, Ferenc; Eifert, Gyula; et al.
PATENT ASSIGNEE(S): Budapesti Vegyimuvek, Hung.
SOURCE: Hung. Teljes, 13 pp.
CODEN: HUXXBU
DOCUMENT TYPE: Patent
LANGUAGE: Hungarian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
HU 48203	A2	19890529	HU 1987-5314	19871126
HU 200988	B	19900928		

PRIORITY APPLN. INFO.: HU 1987-5314 19871126
OTHER SOURCE(S): MARPAT 112:50604

L4 ANSWER 383 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Second processes in the thermal decompn. of MeN(NO2)2, involving the MeN.bul.NO2 radical (I), were examd. In the early stages of decompn., I undergoes unimol. decompn. to MeN: and NO2, whereas in later stages of decompn. I reacts with NO2 to form MeN(O.bul.)NO2 and NO.

ACCESSION NUMBER: 1989:496497 CAPLUS
DOCUMENT NUMBER: 111:96497
TITLE: Mechanism of the thermal decomposition of N,N-dinitromethylamine
AUTHOR(S): Charskii, V. V.; Pavlov, A. N.; Nazin, G. M.; Korsunskii, B. L.; Fedorov, B. S.
CORPORATE SOURCE: Inst. Khim. Fiz. im. Semenova, Chernogolovka, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1989), (4), 794-7
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 384 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The kinetics of thermal decompn. of RN(NO2)2 (I; R = Me, Et, Pr, Bu) in the gas phase indicated the decompn. involves homogeneous and unimol. dissocn., with N-NO2 bond cleavage as the rate-limiting step. The activation parameters for I decompn. indicated the N-NO2 bond dissocn. energy in I is approx. 42 kJ/mol. lower than in the mono-NO2 analogs. The identification of activation energy with N-NO2 bond dissocn. energy permitted calcn. of heat of formation of the fragment radicals and related mols.

ACCESSION NUMBER: 1989:496496 CAPLUS
DOCUMENT NUMBER: 111:96496
TITLE: Kinetics of thermal decomposition of N,N-dinitroalkylamines
AUTHOR(S): Korsunskii, B. L.; Sitonina, G. V.; Fedorov, B. S.; Dubovitskii, F. I.; Eremenko, L. T.
CORPORATE SOURCE: Inst. Khim. Fiz. im. Semenova, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1989), (4), 790-3
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 385 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The heats of formation of a series of polyat. mols. contg. NO2 and/or NF2 groups were detd. by using the isodesmic procedure of J. A. Pople et al., (1970) at the SCF level. An excellent correlation between the semiempirical heats of formation and the corresponding available exptl. data is obsd. The NO2 and NF2 groups have large and comparable destabilizing effects.

ACCESSION NUMBER: 1989:465155 CAPLUS
DOCUMENT NUMBER: 111:65155
TITLE: Heats of formation of some energetic compounds containing NO2 and/or NF2 groups
AUTHOR(S): Leroy, G.; Sana, M.; Wilante, C.; Peeters, D.; Bourasseau, S.
CORPORATE SOURCE: Lab. Chim. Quant., Louvain-la-Neuve, B-1348, Belg.
SOURCE: THEOCHEM (1989), 56, 251-9
CODEN: THEODJ; ISSN: 0166-1280
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 386 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The electronic structure and stabilization energy of radicals was discussed. Two types of radicals were identified: radicals centered on one atom and radicals in which the spin is delocalized on several atoms or bonds. The first type are strongly reactive. The second type undergo electronic reorganization during reactions which leads to transition barriers. For abstraction reactions and dimerization reactions of radicals, the transition barrier may be expressed as a linear combination of bond energies of formation and cleavage. The results indicated that for dehydrodimerization (abstraction + dimerization), it is necessary that RH have a weak RH bond, and that the product RR have a strong central bond.

ACCESSION NUMBER: 1989:172609 CAPLUS
DOCUMENT NUMBER: 110:172609
TITLE: Theoretical study of dehydrodimerization reactions
AUTHOR(S): Sana, M.; Leroy, G.
CORPORATE SOURCE: Lab. Chim. Quantique, Louvain-la-Neuve, B-1348, Belg.
SOURCE: Annales de la Societe Scientifique de Bruxelles, Serie 1: Sciences Mathematiques, Astronomiques et Physiques (1988), Volume Date 1987, 101(1-2), 23-57
CODEN: ASSBAH; ISSN: 0037-959X
DOCUMENT TYPE: Journal
LANGUAGE: French

L4 ANSWER 387 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The N-centered radicals carrying two electron-donor substitutes are persistent or stable due to their large thermodn. stabilization energy. On the other hand, aminyl radicals carrying both an electron-donor and an electron-acceptor substituent (the so-called push-pull aminyl radicals) may exhibit, even in the gas phase, an appreciable thermodn. stabilization quant. measured by their extra- or merostabilization energy. They are also kinetically stabilized, essentially because of the destabilization of their dimer. Finally N-centered radicals carrying two electron-acceptor substituents are largely destabilized. They are either transient or persistent depending on how much their dimer is destabilized.

ACCESSION NUMBER: 1988:173872 CAPLUS
DOCUMENT NUMBER: 108:173872
TITLE: A theoretical investigation of the structure and reactivity of nitrogen-centred radicals
AUTHOR(S): Leroy, Georges; Sana, Michel; Wilante, Claude; Peeters, Daniel; Dogimont, Charles
CORPORATE SOURCE: Lab. Chim. Quant., Univ. Cathol. Louvain, Louvain-la-Neuve, B-1348, Belg.
SOURCE: THEOCHEM (1987), 38(3-4), 249-67
CODEN: THEODJ; ISSN: 0166-1280
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 388 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The following thermochem. values (in kJ/mol) were detd. for MeN(NO2)2: heat of combustion, -823.8; heat of formation (liq.), 1.5; heat of formation (gas), 53.5; N-N bond energy, 118.4. A heat of formation of 137.7 kJ/mol was found for the MeNNO2 radical.

ACCESSION NUMBER: 1988:111708 CAPLUS
DOCUMENT NUMBER: 108:111708
TITLE: Thermochemistry of methyldinitramine and the enthalpy of formation of the methylnitramine radical
AUTHOR(S): Miroshnichenko, E. A.; Korchatova, L. I.; Korsunskii, B. L.; Fedorov, B. S.; Orlov, Yu. D.; Eremenko, L. T.; Lebedev, Yu. A.; Dubovitskii, F. I.
CORPORATE SOURCE: Inst. Khim. Fiz., Moscow, USSR
SOURCE: Doklady Akademii Nauk SSSR (1987), 295(2), 419-23 [Phys. Chem.]
CODEN: DANKAS; ISSN: 0002-3264
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 389 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The following quantities were calcd. for several nitramines: the orbital energy (.epsilon.) of the unshared electrons on the amine N, the electron d. of this orbital, its s character, and its diam. For MeN(NO2)CH:CH2 and O2NNHCH2R (R = NHNO2, OAc), the effect of conformation on .epsilon. was calcd.

ACCESSION NUMBER: 1987:101470 CAPLUS
DOCUMENT NUMBER: 106:101470
TITLE: Characteristics of the lone-pair electron orbital on the amine nitrogen atom in N-nitro compounds and its interactions with unoccupied frontier orbitals of substituents using localized MO terms
AUTHOR(S): Ivshin, V. P.; Yashukova, O. A.; Shlyapochnikov, V. A.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1986), (6), 1295-8
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 390 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The 15N chem. shifts of polysubstituted amines was linearly correlated with the sum of 15N chem. shifts of monosubstituted N compds. The predominant factor was the electronegativity of the substituents.

ACCESSION NUMBER: 1985:614654 CAPLUS
DOCUMENT NUMBER: 103:214654
TITLE: Nitrogen-15 NMR study of the nitrogen atoms in polyfunctional compounds
AUTHOR(S): Dorie, J.; Gouesnard, J. P.
CORPORATE SOURCE: Lab. Chim. Org. Phys., CNRS, Nantes, 44072, Fr.
SOURCE: Journal de Chimie Physique et de Physico-Chimie Biologique (1985), 82(4), 369-72
CODEN: JCPBAN; ISSN: 0021-7689
DOCUMENT TYPE: Journal
LANGUAGE: French

L4 ANSWER 391 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Kinetic data for the decompn. of MeN(NO2)2 (I) in 46.1-78.2% H2SO4 indicated a 2-step mechanism. In the 1st step I was decompd. to MeNHNO2, which was decompd. in the 2nd step to MeOH and N2O.

ACCESSION NUMBER: 1983:452907 CAPLUS
DOCUMENT NUMBER: 99:52907
TITLE: Kinetics and mechanism of the acid-catalyzed decomposition of methyldinitroamine
AUTHOR(S): Glukhov, A. A.; Kuznetsov, L. L.; Gidaspov, B. V.
CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
SOURCE: Zhurnal Organicheskoi Khimii (1983), 19(4), 704-7
CODEN: ZORKAE; ISSN: 0514-7492
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 392 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Nitration of (RNX)2CH2 (I; R = Me, R2 = CH2CH2; X = Ac) with NO2+ BF4- gave mixts. of the corresponding RNXCH2NX1R (II; X1 = NO2) and I (same R, X = NO2). An analogous reaction of I (R = Me; X = CO2Me, MeSO2) gave MeNXNO2 (III; same X), and I (R = Me, X = p-tosyl) gave mixts. the the corresponding II and III, along with [(O2N)2N]2CH2. MeSO2NRCH2NMeNO2 (R = Me, CHMe2) gave the corresponding MeSO2NRNO2 and I (R = Me, X = NO2) under these conditions, and RSO2NR1CH2R2 (R = Me, Ph, p-tolyl; R1 = H, Me; R2 = morpholino) gave N-nitromorpholine as the major product.

ACCESSION NUMBER: 1982:84999 CAPLUS
DOCUMENT NUMBER: 96:84999
TITLE: Nitration of acylated methylenediamine derivatives
AUTHOR(S): Luk'yanov, O. A.; Mel'nikova, T. G.; Tartakovskii, V. A.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1981), (10), 2335-9
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 393 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB NO2+ BF4- (I) nitrated MeSO2NRAc (R = Me, Et, CHMe2), AcNMeCO2Me and MeSO2NMeCO2Me in 1:1 ratio in MeCN at -25 to +20.degree. to give 71-83% MeSO2NRNO2 (same R) and 63 and 33% O2NNMeCO2Me, resp. Analogous nitration of p-MeC6H4SO2NMeAc gave 24% p-MeC6H4SO2NMeNO2 and 37% 4,x-Me(O2N)C6H3NMeNO2, and p-MeC6H4SO2NMeCO2Me (II) gave 45 and 68% 4,x-Me(O2N)C6H3NMeCO2Me using 1:1 and 2:1 II-I, resp. Similarly, nitrating N-methylphthalimide and MeNAc2 with I in 1:1 and 2:1 ratio gave 36 and 75% N-methylphthalimide and 26% AcNMeNO2 and 15% MeN(NO2)2 (III) and 75% III, resp. However, N-methylsuccinimide and MeN(SO2Me)2 were inert under these conditions. Therefore, the reactivity of the acidic residues decreased in the order of Ac > MeSO2 .mchgt. 4,x-Me(O2N)C6H3SO2, CO2Me.

ACCESSION NUMBER: 1982:34461 CAPLUS
DOCUMENT NUMBER: 96:34461
TITLE: Nitration of N-alkylimides
AUTHOR(S): Luk'yanov, O. A.; Mel'nikova, T. G.; Kriger, L. N.; Tartakovskii, V. A.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1981), (9), 2138-41
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 394 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The 15N and 13C NMR spectra were recorded of a no. of 15N-enriched cyclic and acyclic secondary N-nitroamines. The results are discussed in terms of both electronegativity effects and conformational factors.

ACCESSION NUMBER: 1981:496408 CAPLUS
DOCUMENT NUMBER: 95:96408
TITLE: Application of carbon-13 and nitrogen-15 NMR spectroscopy to structural studies on nitramines
AUTHOR(S): Bulusu, Suryanarayana; Axenrod, Theodore; Autera, Joseph R.
CORPORATE SOURCE: Energ. Mater. Div., Large Caliber Weapon Syst. Lab., Dover, NJ, 07801, USA
SOURCE: Organic Magnetic Resonance (1981), 16(1), 52-6
CODEN: ORMRBD; ISSN: 0030-4921
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 395 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The following relation was found between the rate const. (k) for electron transfer from amines to MeN(NO2)2 and the half-wave potentials (E) for oxidn. of the amines at a rotating Pt disk electrode in MeCN: log k = 2.7 - 5.3E. The amines used were R2NH (R = Me2CH, Et, Me2CHCH2, Bu), piperidine, and pyrrolidine; E decreased in this order.

ACCESSION NUMBER: 1981:423910 CAPLUS
DOCUMENT NUMBER: 95:23910
TITLE: Relation between reaction rates of dialkylamines with methyl-N,N-dinitroamine and semiwave potentials of amine oxidation on a rotating disk electrode
AUTHOR(S): Shcherbinin, M. B.; Bedin, M. P.; Bazanov, A. G.; Tselinskii, I. V.
CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
SOURCE: Zhurnal Obshchei Khimii (1981), 51(3), 709-10
CODEN: ZOKHA4; ISSN: 0044-460X
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 396 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The reaction of MeN(NO2)2 with piperidine to give the piperidinium salt of
MeN:NO2- and 1-nitropiperidine followed the Kirkwood relation in aprotic solvents. This result and the dipole moments of the reactants were used to calc. a dipole moment of 8.8 D and a degree of charge sepn. of 0.43 for
the activated complex. The low rates in hydroxylic solvents were attributed to reactant solvation.
ACCESSION NUMBER: 1980:549624 CAPLUS
DOCUMENT NUMBER: 93:149624
TITLE: Effect of a solvent on the reaction rate of methyl-N,N-dinitroamine with piperidine
AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.;
Mikheeva, L. I.
CORPORATE SOURCE: USSR
SOURCE: Zhurnal Organicheskoi Khimii (1980), 16(6), 1123-6
CODEN: ZORKAE; ISSN: 0514-7492
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 397 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The reaction of MeN(NO2)2 with dialkylamines, morpholine, piperidine, piperazine, and pyrrolidine to give ammonium salts of MeN:NO2- and N-nitro
amines was 1st order in each reactant. Activation enthalpies and entropies were detd., and an isokinetic temp. of 388 .+-. 19 K was obtained. LFER treatments yielded low .rho. values (0.99-1.60), indicating a transition state of low polarity.
ACCESSION NUMBER: 1980:549476 CAPLUS
DOCUMENT NUMBER: 93:149476
TITLE: Effect of the structure of dialkylamines on the kinetics of their reaction with methyl-N,N-dinitroamine
AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.;
Dudyrev, A. S.
CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
SOURCE: Zhurnal Organicheskoi Khimii (1980), 16(6), 118-23
CODEN: ZORKAE; ISSN: 0514-7492
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 398 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The reaction of MeN(NO2)2 (I) with EtNO2 (II) and KOH to give KNMeNO2 and KCMe(NO2)2 was 2nd order in I and 1st order in the anion of II. The effects of initiators and inhibitors of radical processes indicated that a
radical-anion chain mechanism was involved.
ACCESSION NUMBER: 1980:128098 CAPLUS
DOCUMENT NUMBER: 92:128098
TITLE: Mechanism of the reaction of methyl-N,N-dinitroamine with nitrocarbanions
AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.
CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
SOURCE: Kinetika i Kataliz (1979), 20(6), 1597-8
CODEN: KNKTA4; ISSN: 0453-8811
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 399 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB R4N+ OH- (R = Me, Et) reacted with R1NHNO2 (R1 = C1-C5 n-alkyl) at 0.degree. in corresponding ROH to give 77.4-94.1% R4N+ -NR1NO2, which was nitrated with FNO2 in MeCN at -30 to -25.degree. to give 54.4-70.1% R1N(NO2)2 (I); R1 = C2-C5 n-alyl). The bulky cations promoted N-nitration
by FNO2 by O-nitration by NO2+ BF4-. The refractive indexes of I increased with the size of the R1 and decrease linearly with their d.
ACCESSION NUMBER: 1980:93827 CAPLUS
DOCUMENT NUMBER: 92:93827
TITLE: N-Nitration of primary nitramines with nitryl fluoride
AUTHOR(S): Gafurov, R. G.; Fedorov, B. S.; Eremenko, L. T.
CORPORATE SOURCE: Inst. Khim. Fiz., Chernogolovka, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1979), (10), 2289-92
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 400 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB To det. the reactivity of the methyl-N,N-dinitroamine (I) [25346-05-8] as an electron acceptor, its electrochem. redn. was studied on a dropping Hg electrode in 65% aq. 2-propanol with nitrate ions in the supporting electrolyte. During redn. in acid buffered soln. (0.1N HNO3 + 0.1N NH4NO3), I gives 2 irreversible diffusion waves: 2-electron with E1/2 = -0.04 V (vs. SCE) and 6-electron (E1/2 = -2.6 V).

ACCESSION NUMBER: 1979:446367 CAPLUS
DOCUMENT NUMBER: 91:46367
TITLE: Polarographic study of methyl-N,N-dinitroamine
AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Zaitsev, A. G.; Tselinskii, I. V.
CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
SOURCE: Zhurnal Obshchei Khimii (1979), 49(5), 1173
CODEN: ZOKHA4; ISSN: 0044-460X
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 401 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A CIDNP study of the title reaction suggested a mechanism involving electron transfer from Me2NH to MeN(NO2)2.

ACCESSION NUMBER: 1979:419451 CAPLUS
DOCUMENT NUMBER: 91:19451
TITLE: Chemical polarization of nuclei in the reaction of methyl-N,N-dinitroamine with dimethylamine
AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.; Gidaspov, B. V.
CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
SOURCE: Zhurnal Organicheskoi Khimii (1979), 15(4), 680-3
CODEN: ZORKAE; ISSN: 0514-7492
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 402 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Nitrolysis of RCONR1NO2 (R = Me, R1 = Me, Et, Pr, Bu; R1 = Me, R = Pr, Me2CH, Bu, Me2CHCH2, Me3C) was carried out in org. solvents to give (RCO)+BF4- and R1N(NO2)2.

ACCESSION NUMBER: 1979:103356 CAPLUS
DOCUMENT NUMBER: 90:103356
TITLE: N-nitration of amides. III. Nitrolysis of N-nitro-N-alkyl amides of monobasic aliphatic carboxylic acids by nitronium tetrafluoroborate
AUTHOR(S): Andreev, S. A.; Lebedev, B. A.; Koldobskii, G. I.; Tselinskii, I. V.; Gidaspov, B. V.
CORPORATE SOURCE: USSR
SOURCE: Zhurnal Organicheskoi Khimii (1978), 14(5), 907-9
CODEN: ZORKAE; ISSN: 0514-7492
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 403 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Treating RCONHR1 (R = Me, Cl3C, Pr, Me2CHCH2, Me2C; R1 = Me, Bu) with NO2+ BF4- in an org. solvent afforded the corresponding R1NHNO2 and RCO+ BF4-, which underwent acid-catalyzed cleavage under the reaction conditions.

ACCESSION NUMBER: 1978:507941 CAPLUS
DOCUMENT NUMBER: 89:107941
TITLE: N-nitration of amides. IV. Nitrolysis of N-alkylamides of aliphatic carboxylic acids by nitronium tetrafluoroborate in a medium of organic solvents
AUTHOR(S): Andreev, S. A.; Lebedev, B. A.; Tselinskii, I. V.
CORPORATE SOURCE: USSR
SOURCE: Zhurnal Organicheskoi Khimii (1978), 14(5), 909-12
CODEN: ZORKAE; ISSN: 0514-7492
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 404 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Treatment of (MeN:NO2)-X+ (X = K+, NH4+, Me4N+, Et4N+) with FNO2 in MeCN gave (cation, % yield MeONO2, and % yield MeN(NO2)2 given): K, 65.6, 0; NH4, 48.2, 17.1; Me4N, 6.0, 59.3; Et4N, 0, 72.3.
ACCESSION NUMBER: 1978:442297 CAPLUS
DOCUMENT NUMBER: 89:42297
TITLE: Effect of cations on the direction of the reaction of primary nitramine salts with nitryl fluoride
AUTHOR(S): Gafurov, R. G.; Fedorov, B. S.; Eremenko, L. T.
CORPORATE SOURCE: Inst. Khim. Fiz., Chernogolovka, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1978), (3), 734
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 405 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The 1H, 13C and 15N NMR spectra of O2NNRR1 (R = H, Me, Me3Si; R1 = Me, CO2Me, CO2Et, NO2), R2N:N(O)OR3 (R2 = Me, CO2Me, CO2Et; R3 = Me, Me3Si, Me2CH) and some related compds. were discussed.
ACCESSION NUMBER: 1978:135833 CAPLUS
DOCUMENT NUMBER: 88:135833
TITLE: Use of nitrogen-15 spin-spin coupling constants for the structural analysis of derivatives of nitramines and N-nitrourethanes
AUTHOR(S): Ioffe, S. L.; Blyumenfel'd, A. L.; Shashkov, A. S.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1978), (1), 246-51
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 406 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Oxidative dimerization of R2CHNO2 (R2 = Me2, (CH2)4, (CH2)5] with MeN(NO2)2 (I) at 45-65.degree. in MeOH contg. NaOH yielded 32-48% O2NCR2CR2NO2. I nitrated R1CH2NO2 (R1 = H, Me, Et, HOCH2) at 0-20.degree.
in MeOH contg. KOH to give 34-55% R1C(NO2)2K. PrNH2, Et2NH and morpholine were converted to the corresponding nitramines in 54-70% yield with I in THF at 0-20.degree..
ACCESSION NUMBER: 1978:61918 CAPLUS
DOCUMENT NUMBER: 88:61918
TITLE: gem-Dinitramines - new nitrating agents
AUTHOR(S): Luk'yanov, O. A.; Shlykova, N. I.; Gorelik, V. P.; Tartakovskii, V. A.
CORPORATE SOURCE: Inst. Org. Khim., Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1977), (10), 2384
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 407 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Dipole moments, at. charges and heats of atomization of N2H4, H2NNO2 and several of their derivs. were calcd. by the CNDO/2 method. The enthalpies of N-N bonds are lower than those of C-N bonds. The magnitudes of the charges on the atoms of the NO2 group in N-NO2 compds. exceed those in C-NO2 compds.
ACCESSION NUMBER: 1978:37088 CAPLUS
DOCUMENT NUMBER: 88:37088
TITLE: Electron structure of hydrazines and nitramines
AUTHOR(S): Belik, A. V.; Bakeeva, S. K.; Shlyapochnikov, V. A.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1977), (11), 2608-10
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 408 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Bond lengths, bond angles, and rotational angles were detd. for MeN(NO2)2 by electron diffraction. The C-N bond is 42.2.degree. out of the plane of the 3 N atoms.
ACCESSION NUMBER: 1978:22044 CAPLUS
DOCUMENT NUMBER: 88:22044
TITLE: Electron-diffraction structure study of methyldinitramine molecule
AUTHOR(S): Tarasenko, N. A.; Vilkov, L. V.; Slepnev, G. E.; Pankrushev, Yu. A.
CORPORATE SOURCE: Inst. Neftekhim. Sint., Moscow, USSR
SOURCE: Zhurnal Strukturnoi Khimii (1977), 18(5), 953-4
CODEN: ZSTKAI; ISSN: 0136-7463
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 409 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The additive method of interat. interactions can be used for conformational anal. of nitramines only if internal rotation is taken into account. As the angle between the CNC and NNO2 planes in Me2NNO2 varied from 0 to 20 to 40.degree., the energy of nonbonded interactions varied from 69.39 to 61.45 to 73.26 kcal/mol. H2NNO2, MeNHNO2, and MeN(NO2)2 were also examd.
ACCESSION NUMBER: 1977:517485 CAPLUS
DOCUMENT NUMBER: 87:117485
TITLE: Molecular structure of nitramines and the role of nonvalent interactions
AUTHOR(S): Tarasenko, N. A.; Slepnev, G. E.; Avakyan, V. G.; Vilkov, L. V.
CORPORATE SOURCE: Khim. Fak., Mosk. Gos. Univ., Moscow, USSR
SOURCE: Deposited Doc. (1975), VINITI 2322-75, 20 pp.
Avail.:
BLLD
DOCUMENT TYPE: Report
LANGUAGE: Russian

L4 ANSWER 410 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB An electron-diffraction study of MeNRNO2 (I; R = H, Cl, NO2) showed that the N-N bond length increased in the stated order of R. In I (R = H) the NO2 group was rotated 28.degree. out of the CNN plane. In I (R = NO2) the min. distance between O atoms of different NO2 groups was 2.20 .ANG..
ACCESSION NUMBER: 1977:484438 CAPLUS
DOCUMENT NUMBER: 87:84438
TITLE: Structure of nitramines in the gas phase
AUTHOR(S): Slepnev, G. E.; Tarasenko, N. A.; Sadova, N. I.; Vilkov, L. V.
CORPORATE SOURCE: Mosk. Gos. Univ. im. Lomonosova, Moscow, USSR
SOURCE: Tezisy Dokl. - Vses. Soveshch. Org. Kristallokhim., 1st (1975), Meeting Date 1974, 62-3. Editor(s): Struchkov, Yu. T.; Bleidelis, Ya. Ya. "Zinatne": Riga, USSR.
CODEN: 35XAAN
DOCUMENT TYPE: Conference
LANGUAGE: Russian

L4 ANSWER 411 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The angles of deviation from planarity were calcd. for NO2NH2, NO2NMe2, and (NO2)2NMe by the semi-empirical CNDO method of Boyd and Whitehead (R.T.B. and M.A.W., 1972). The barrier to the rotation around the N-N bond for NO2NH2 is 2.5 and for NO2NMe2 is 8 kcal/mole. The barrier to inversion of NO2NH2 is 6.5 and of (NO2)2NMe is 3.5 kcal/mole. The most stable configuration of the (NO2)2NMe mol. has the rotation angle of the both NO2 group equal 45-50.degree..
ACCESSION NUMBER: 1974:441608 CAPLUS
DOCUMENT NUMBER: 81:41608
TITLE: Quantum-chemical determination of the geometric configuration of nitramide, dimethylnitroamine, and dinitromethylamine
AUTHOR(S): Burshtein, K. Ya.; Fundyler, I. N.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1974), (4), 892-4
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 412 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A high-purity N, O, and F compd. was prepd. by causing F to react with NO2
(ratio NO2:F2 = 2:1) adsorbed on a Al or Ni surface at -30.degree., previously activated by N, O, and F compds. The final white solid compd. with a vapor pressure of 3-6 torr had the formula ONOF, based on its mol. wt. (Regnault method), ir strong bands 1713, 1302, and 885 cm-1, and isomerization to FNO2. By using similar conditions and process but changing the ratio NO2:F2, two other compounds were obtained possibly NO3F3 (ir bands 1761, 1294, 927, and 804 cm-1) and ONOF(NO2)2, (ir bands 1720 and 1240 cm-1).

ACCESSION NUMBER: 1971:150605 CAPLUS
DOCUMENT NUMBER: 74:150605
TITLE: Nitrogen, oxygen, and fluorine compounds
AUTHOR(S): Bruna, P. J.; Jubert, A. H.; Sicre, Juan E.; Schumacher, Hans J.
CORPORATE SOURCE: Fac. Cienc. Exactas, Univ. Nacl. La Plata, La Plata, Argent.
SOURCE: Anales de la Sociedad Cientifica Argentina (1970), 190(1-2), 39-50
CODEN: ASCAA2; ISSN: 0037-8437
DOCUMENT TYPE: Journal
LANGUAGE: Spanish

L4 ANSWER 413 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The title compds. are prepd. by treating monoalkylurea or its nitrate with
HNO3 and Ac2O at <5.degree.. Thus, 20 g. monomethylurea-HNO3 was added to
a mixt. of 120 g. HNO3 (sp. gr. 1.52) and 100 g. Ac2O with stirring at -5.degree.. After 10 min. stirring, the reaction mixt. was poured into 1 l. ice water and extd. with 200 ml. ether. The ethereal ext. was washed with H2O, 5% Na2CO3, and H2O, and distd. in vacuo to remove the ether. The residual soln. was dried with CaCl2 and distd. to give 6 g. methyldinitroamine, d20 1.4267, n20D 1.4472, .eta. = 1.42 cp. (20.degree.), vapor pressure = 7 mm. Hg (20.degree.).

ACCESSION NUMBER: 1969:490792 CAPLUS
DOCUMENT NUMBER: 71:90792
TITLE: Alkyldinitroamines
INVENTOR(S): Shiino, Kazuo
PATENT ASSIGNEE(S): Japan, Bureau of Industrial Technology
SOURCE: Jpn. Tokkyo Koho, 2 pp.
CODEN: JAXXAD
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 44007687	B4	19690411	JP	19640617

L4 ANSWER 414 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB N,N-Dinitramines are prepd. by reacting a nongaseous, highly conductive ionic nitronium salt with a primary org. nitramine or its salt. The use of ionic nitrating agents (e.g. nitronium tetrafluroborate) is essential in contrast to conventional nitrating agents (e.g. HNO3 etc), which do not
yield N,N-dinitramines upon treatment of primary nitramines. Thus, 10.0 g. BuNHNO2 (I) in 75 ml. MeCN at -30.degree. is treated with 11.4 g. NO2BF4 with vigorous stirring. The reaction mixt. was allowed to come to 0.degree. before being quenched in 400 ml. ice-H2O. The sepd. viscous yellow oil was taken up in CH2Cl2 and the resulting soln. was washed with cold, 4N NaOH and then with 4 80-ml. portions of H2O, dried, and distd. to
yield 50% BuN(NO2)2 (II), b0.02 27-8.degree.. II was similarly prepd. in 98% yield from the NH4 salt of I. Similarly prepd. were N,N,-N',N'-tetranitroethylenediamine (40% yield), N,N-dinitro-1-methylhexylamine, N,N,N',N'-tetranitro-3-nitraza-1,5-diaminopentane (m. 71-2.degree. (decomp.), N,N-dinitro-2-nitrato-ethylenediamine, N,N,N',N'-tetranitro-2-nitrato-1,3-diaminopropane, N,N-dinitro-3-chloropentylamine, and N,N,N',N'-tetranitrophenylenediamine.

ACCESSION NUMBER: 1969:67584 CAPLUS
DOCUMENT NUMBER: 70:67584
TITLE: N,N-Dinitramines useful in propellant, explosive, and pyrotechnic compositions
PATENT ASSIGNEE(S): Aerojet-General Corp.
SOURCE: Brit., 6 pp.
CODEN: BRXXAA
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1126591		19680905		
US 3428667		19690000	US	
PRIORITY APPLN. INFO.:			US	19620920

L4 ANSWER 415 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The title compd. (I), which may be useful as an explosive or propellant, was prepd. by the reaction of hydrazine with acrylonitrile giving unsym. and sym. disubstituted hydrazine mixts. which are nitrated and hydrolyzed.
The reaction of hydrazine with acrylonitrile in a 1:2 molar ratio gave the
sym. and unsym. disubstituted derivs., (NCCH2CH2NH)2 and (NCCH2CH2)2NNH2 (II). The corresponding mono-, tri-, and tetrasubstituted hydrazines were
not detected. To the product mixt. was added p-nitrobenzaldehyde in glacial HOAc and the weight of the hydrazone detd. Furthermore, II was analyzed as the acetone hydrazone by ir spectroscopy. The spectrophotometric results agreed with those obtained by gravimetric anal.
Both showed the II content of the mixt. was 45%. Nitration of the mixt. in HNO3-HOAc-Ac2O in the presence of Cl- as catalyst was successful. Hydrolysis of the nitrated nitrile with concd. HCl gave I.

ACCESSION NUMBER: 1968:12442 CAPLUS
DOCUMENT NUMBER: 68:12442
TITLE: Synthesis of 3,4-dinitro-3,4-diazahexane-1,6-dicarboxylic acid
AUTHOR(S): Iizuka, Satsuki; Namba, Keiho
CORPORATE SOURCE: Univ. Tokyo, Tokyo, Japan
SOURCE: Kogyo Kayaku Kyokaishi (1966), 27(3), 153-7
CODEN: KKKYAW; ISSN: 0368-5977
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

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